

# ECOTOX

## ECOTOXicology Database System

### ECOTOX Code Appendix

Prepared for

U.S. Environmental Protection Agency  
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NOTE: All code additions to the ECOTOX code appendices are forwarded monthly to EPA for approval.

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## Appendix A. Carrier CAS Numbers

<u>Chemical Name</u>	<u>CAS #</u>
Acetate .....	71501
Acetic acid .....	64197
Acetone ( 2-Propanone) .....	67641
Acetonitrile .....	75058
Aerosol OT (Sodium salt) .....	577117
Agar .....	9002180
Arachis oil.....	8002037
Butyl dioxitol .....	112345
Benzene .....	71432
Cadmium Chloride.....	10108642
Cadmium Sulfate.....	10124364
Cod Liver Oil .....	8001692
Cottonseed Oil .....	8001294
Corn Oil .....	8001307
Cornstarch.....	9005258
Cyclosol 63.....	89072606
Diesel oil.....	68334305
1,4-Dioxane .....	123911
DMF, N,N-Dimethylformamide .....	68122
DMSO, Dimethyl Sulfoxide .....	67685
Emulphor.....	9004982
Ethanol (or Ethyl alcohol - absolute alcohol) .....	64175
Ether.....	60297
2-Ethoxyethanol .....	110805
Ethylene Glycol Monomethyl Ether (2-Methoxyethanol).....	109864
Fish Oil .....	8016135
Fuel Oil.....	68476299
Gelatin.....	9000708
Gum acacia .....	9000015
Gum tragacanth .....	9000651

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HCL, Hydrochloric Acid .....	7647010
Hexane (also, N-Hexane).....	110543
HNO <sub>3</sub> , Nitric Acid (HNO <sub>3</sub> ; H <sub>2</sub> SO <sub>4</sub> ,R)-Purity Character (Sulphuric Acid,R).....	7697372
Isopropanol (2-Propanol).....	67630
Iron Sulfates .....	10124499
Lactose.....	63423
Methanol (Methyl alcohol) (CH <sub>3</sub> OH) .....	67561
Methoxyethanol (or 2-Methoxyethanol) .....	109864
Methylcellulose.....	9004675
Methylene Chloride .....	75092
Methyl ethyl ketone .....	78933
Mineral oil .....	8012951
NAHCO <sub>3</sub> , Sodium Bicarbonate .....	144558
NAOH, Sodium Hydroxide.....	1310732
N,N-Dimethylformamide (or Dimethylformamide).....	68122
Nitric Acid .....	7697372
Olive Oil.....	8001250
Peanut Oil .....	8002037
Pentane.....	109660
Petroleum ether.....	8030306
Polyethylene Glycol (2-Propanol) .....	25322683
Polysorbate 80 (Tween 80) .....	809005656
Potassium Hydroxide (KOH) .....	1310583
Propane (Propylene glycol) .....	57556
2-Propanol Isopropanol (or Isopropanol)-Isopropyl alcohol.....	67630
Propylene Glycol .....	57556
Safflower Oil .....	8001238
Saline .....	7647145
Salt.....	7647145
Sesame Seed Oil .....	8008740
Sodium Chloride (Salt, Saline)(Na Cl) .....	7647145
Sodium Sulfate .....	7757826
Soybean Oil.....	8001227

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Starch.....	9005258
Sucrose.....	57501
Sulfuric Acid .....	7664939
Sunflower Oil.....	8001216
Tergitol NPX.....	9016459
Toluene (or Methylbenzene) .....	108883
Toxisol FLC .....	12738920
Trichloroacetic Acid.....	76039
Triethylene Glycol.....	112276
Trimethylene Glycol.....	504632
Trioactanoin .....	538238
Triton-X100 .....	9002931
Tween 40 .....	9005667
Tween 80 (Polysorbate 80) .....	9005656
Water.....	7732185
Vegetable oil .....	68956683
Velsicol.....	2307495
Xylene .....	1330207

## Appendix B. Chemical Grade Codes

AASG	Atomic Absorption Spectrometry Grade
ACS	American Chemical Society Grade
AG	Agricultural Grade
AN	Analar Grade
AL	Analysis Grade
A*	Analytical Grade
A or GU	Analytical or Guaranteed Grade
A or R	Analytical or Reagent Grade
A or S	Analytical or Spectrophotometric Grade
A or T	Technical or Analytical Grade
AN or R	Analar or Reagent Grade
AR*	A.R. Grade (Analytical Reagent Grade)
B	Biological Grade
CT	Certified Grade
CG	Chemical Grade
CH	Chromatographic Grade
CL	Clinical Grade
C	Commercial Grade
C or AN	Commercial or Analar Grade
DG	Distilled in Glass Grade
DS	Dry Standard Grade
EM	Eastman Grade
EL	Electrophoresis Grade
EX	Experimental Grade
EXT	Extra Grade
F	Field Grade
FFL	Free flowing Grade
FO	Formulated Grade

GC	Gas Chromatography Grade
GR	GR Grade
GU	Guaranteed Grade
GUR	Guaranteed Reagent Grade
HPLC*	High Performance Liquid Chromatography Grade
HG	Histological Grade
I	Industrial Grade
L	Laboratory Grade
MK	Merck Grade
MRG	Merck Reagent Grade
ME	Monsanto Electrical Grade
NAF*	National Formulary Grade
NP	Normapur Grade
NR	Not Reported
OP	Optima
PAN	Pestanal Grade
PST	Pesticide Grade
PRG	Pesticide Residue Grade
PH	Pharmaceutical Grade
PRA*	Practical Grade
PR	Production Grade
PG*	Pure Grade
PFG	Purified Grade
R*	Reagent Grade
RFG	Reference Grade
RE	Research Grade
RE or A	Research or Analytical Grade
RS	Residue Grade
SC	Scintillation Grade
SO	Solvent Grade
SPC	Spectrochemical Grade
S	Spectrophotometric Grade

TA	Technical Acid Grade
T*	Technical Grade
T or P	Technical or Purified Grade
T or PU	Technical or Pure Grade
TIS	Tissue Culture Grade
ULV	ULV Grade

UP	Ultrapure Grade
USP*	United States Pharmacopeia Grade
UV	Ultraviolet Grade
UVS	Uvasol Grade

\* Code as "A" for concentration type for organic chemicals for ACQUIRE



## Appendix C. Chemical Formulation Codes

AE	Acid Equivalent	FG	Finely Ground
AI	Active Ingredient	FO	Formulated
ASG	Agricultural Suspension	GCR	Gas Chromatograph Standard
ARST	Analytical Reference Standard	GS	Gaseous
AQ	Aqueous Solution	G	Granule, Granular
AS	Aqueous Suspension	GU	Guaranteed
AAPS	Atomic Absorption Primary Standard	HG	Heavy Granular
CP*	Chemically Pure	LD	Liquid
CRI	Chromatographically Impure	LDCO	Liquid concentrate
CRP	Chromatographically Pure	MO	Miscible Oil
C	Commercial	N	Nanograde
CO	Concentrate	ND	Neutralized, Desensitized
CR	Controlled Release	NF	Nonionized Form
CRY	Crystal	NR	Not Reported
DC	Detached Crystals	OC	Oil Concentrate
DG	Dispersible Granule (also known as "dry flowable")	OD	Oil Dispersion
DP	Dispersible Powder	OS	Oil Soluble
D	Dust	ODA	Organic Dispersal Agent
EC	Emulsifiable Concentrate	PAR	Particulate
EF	Emulsifiable Formulation	PEL	Pellet
ES	Emulsifiable Solution, Agent	PO	Powder
EG	Emulsified Granular	PRE	Prepared in Lab
E	Emulsion	PS*	Primary Standard
EN	Encapsulated	PA	Pro Analsi Quality
FFO	Field Formulated	PU	Pure, Purissium or Puris
FCASS	Fisher Certified Atomic Absorption Standard	PF*	Purified
FK	Flake	RC	Recrystallized
FF	Flowable Formulation	RST*	Reference Standard
		RF	Registered Formulation
		SRF	Slow Release Formulation

SD	Solid	STD	Standard Solution for AA
S	Solution	TC	Technical product
SC	Suspension concentrate	UD	Unneutralized, Desensitized
SF	Sand Formulated	WMC	Water Miscible Concentrate
SO	Soluble Concentrate	WS	Water Soluble
SP	Soluble Powder	WSC	Water Soluble Concentrate
SPCO	Spray Concentrate	WP	Wettable Powder
SPL	Spray Liquid	WHO	World Health Organization
SPO	Spray Powder	W/W	Weight per weight
ST	Standard		

\* Code as "A" for concentration type for organic chemicals for AQUIRE

## Appendix D. Radiolabel Isotope Codes

Ag-110	Silver
Am-241	Americium
As-73	Arsenic
As-74	Arsenic
As-76	Arsenic
Ba-133	Barium
Be-7	Beryllium
C-12	Carbon
C-13	Carbon
C-14	Carbon
Cd-109	Cadmium
Cd-113	Cadmium
Cd-115	Cadmium
Ca-45	Calcium
Cl-36	Chlorine
Cm-244	Curium
Co-60	Cobalt
Co-64	Cobalt
Co-57	Cobalt
Cr-51	Chromium
Cs-137	Cesium
Cs-134	Cesium
Cu-64	Copper
Cu-63	Copper
Cu-65	Copper
Eu-152	Europium
F-18	Fluorine
I-131	Iodine
Fe-59	Iron
H-3	Hydrogen

	(Tritium)
Hg-197	Mercury
Hg-203	Mercury
I-125	Iodine
I-131	Iodine
Mn-54	Manganese
N-15	Nitrogen
Ni-59	Nickel
Ni-63	Nickel
Np-235	Neptunium
NR	Not Reported
P-32	Phosphorus
Pb-210	Lead
Pb-203	Lead
Po-208	Polonium
Po-210	Polonium
Pu-239	Plutonium
Pu-237	Plutonium
Ra-226	Radium
Ru-106	Ruthenium
S-35	Sulfur
Sb-125	Antimony
Se-75	Selenium
Sn-113	Tin
Sr-90	Strontium
Sr-85	Strontium
Tc-95	Techninium
Tc-99	Technicium
Te-128	Tellurium
Tl-115	Thallium

Th-232	Thorium
Th 238	Thorium
U-238	Uranium
U-232	Uranium
U-235	Uranium
V-48	Vanadium

V-49	Vanadium
Yes	Unknown radiolabel
Zn-65	Zinc

## Appendix E. Organism Source Codes

Code	Definition
CBC	<b>C</b> aptive <b>b</b> reeding <b>c</b> olony
COM	<b>C</b> ommercial source
DOM	<b>D</b> omestic strain
GAM	<b>G</b> ame farm strain
GOV	<b>G</b> overnment agency source
LAB	<b>L</b> aboratory strain
MLT	<b>M</b> ultiple Sources
NR	<b>N</b> ot reported
WLD	<b>W</b> ild strain

## Appendix F. Lifestage Codes (at beginning of exposure)

### I. Organism lifestage codes

Code	Definition
AD	Adult
AL	Alevin
BL	Blastula
CC	Cocoon
CO	Copepodid
CP	Copepodite
CS	Cleavage stage
CY	Cyst
EG	Egg
EL	Elver
EM	Embryo
EY	Eyed stage, eyed embryo
FI	Fingerling
FY	Fry
GA	Gastrula
GE	Gestation
GL	Glochidia
GM	Gamete
IG	Imago
IM	Immature
IN	Instar
IT	Intermolt
JV	Juvenile; fledgling, hatchling, weanling
LC	Lactational
LP	Larva-pupa
LR	Prolarvae
LV	Larvae
LO	Lobes
MA	Mature
ME	Megalopa
ML	Morula
MO	Molt

Code	Definition
MX	Multiple
MY	Mysis
NB	New born
ND	Naiad
NE	Neonate
NH	New, newly, or recent hatch
NL	Neurala
NR	Not reported, unknown
NU	Nauplii
NY	Nymph
OO	Oocyte, ova
PA	Parr
PC	Pre-hatch
PD	Pre-molt
PE	Post emergence
PG	Post spawning
PI	Post molt
PJ	Pre-, sub-, semi- or near adult
PK	Post smolt
PN	Post nauplius
PO	Post hatch
PQ	Pre-larvae
PS	Pre smolt
PT	Protolarvae
PU	Pupa
PV	Post larvae
PW	Pre-spawning
PY	Post embryo
PZ	Protozoa
SA	Subadult
SC	Yolk-sac larvae, sac larvae
SF	Sac fry, yolk sac fry

Code	Definition
SI	Sexually immature
SM	Sexually mature
SMT	Smolt
SO	Sporeling
SP	Sperm
SR	Spore
ST	Spat
SU	Swim-up
TA	Tadpole

Code	Definition
UY	Underyearling
VI	Virgin
YA	Young adult
YE	Yearling
YO	Young
YY	Young of the year
ZO	Zoea
ZY	Zygote

## II. Plant lifestage codes

Code	Definition
BS	Bud blast stage
EX	Exponential Growth Phase
FB	Mature, full-bloom stage (fruit trees)
FG	Female gametophyte
FO	Flower opening
GP	Lag growth phase
GS	Germinated seed
IB	Incipient bud
LG	Log growth phase
MD	Mature dormant
MG	Male gametophyte
MX	Multiple stages
MT	Mature, no specified stage
PB	Mature, post-bloom stage (fruit trees)
PH	Mature, pit-hardening stage (fruit trees)
RC	Rooted cuttings
RP	Mature reproductive
RST	Rootstock
SB	Shoot
SE	Scape elongation
SD	Seed
SG	Mature, side-green stage (fruit trees)

Code	Definition
SL	Seedling
SN	Sapling
SY	Stationary growth phase
TC	Tissue culture callus
TU	Tuber
VG	Mature vegetative

## Appendix G. Soil Type Codes

### Standard Artificial Soils:

OECD 1984	Organization for Economic Cooperation and
Development 1984	
OECD 1993	Organization for Economic Cooperation and
Development 1993	
EEC	Council of European Communities
ISO 1994	International Standard Organization 1994

Standard Artificial Soil Characteristics		
Soil Type	Organic Matter	pH
OECD 1984	10 % peat	6.0
OECD 1993	10 % peat	6.0
EEC	10 % peat	6.0
ISO 1994	10 % peat	6.0



## Appendix H. Test Location Codes

Code	Definition
<b>FieldA</b>	<b>Field, Artificial</b> - a simulated or artificial field study is conducted in “an artificially bounded system that is a simplification of a specific ecosystem”, e.g. aviaries, pens, enclosures, outdoor pots
<b>FieldN</b>	<b>Field, Natural</b> - a natural field study is one “in which both the test system [...] and exposure to the stressor are “naturally” derived”; e.g. sprayed agricultural field or orchard plots, field surveys.
<b>FieldU</b>	<b>Field, Unable</b> to determine whether natural or artificial setting
<b>Lab</b>	<b>Laboratory</b> indoor setting, including environmental chamber, greenhouse, lath house, garden frame or indoor pots
<b>NR</b>	<b>Not Reported</b> ; unable to determine whether laboratory or field

## Appendix I. Valid Duration Units

Code	Definition
s	second
mi	minute
h	hour
d	day
wk	week
mo	month
yr	year
lf	lifetime; no associated numeric value
NR	time information <b>not</b> reported
alv	<b>a</b> levin
abs	until <b>a</b> bscission
ac	age class
ant	until <b>a</b> nthesis
b0.25	<b>0.25</b> bloom stage
blm	<b>b</b> loom stage
brd	<b>B</b> rood or litter
brs	<b>b</b> reeding season
bs	<b>b</b> ud blast stage
bt	to <b>b</b> oot stage
cd	colony <b>d</b> iameter
cfs	to <b>c</b> ommercial flower stage
clv	<b>c</b> leavage
crs	crab stage
cs	cell stage
dpe	<b>d</b> ays <b>p</b> ost- <b>e</b> mergence
dd	degree days
dh	degree hours
dpfl	<b>d</b> ays <b>p</b> ost <b>f</b> lowering
dph	<b>d</b> ays <b>p</b> ost <b>h</b> atch
dphv	<b>d</b> ays <b>p</b> ost <b>h</b> arvest
dpf	<b>d</b> ays <b>p</b> ost <b>f</b> ertilization
dpn	days post-natal

dpo	days post oviposition
dpp	days post planting/sowing
dpr	days post-release
dpref	days pre-fertilization
dps	days post spawn
dpt	days pre-fertilization
dpu	days post-swim up
dpw	days post swimming
dbh	days pre-hatch
ea	to <b>e</b> aring or heading
eb	<b>e</b> arly <b>b</b> loom stage
ej	egg to juvenile
ep	<b>e</b> gg to <b>p</b> upation
eslk	to <b>e</b> arly <b>s</b> ilk stage
el	nth <b>e</b> gg <b>l</b> aid
em	to <b>e</b> mergence
epa	egg to pre-adult
eso	<b>e</b> nd of <b>s</b> hooting stage
ey	<b>e</b> yed stage (time to eyed stage of fish eggs)
f5	<b>50%</b> flowering
fb	<b>f</b> ull <b>b</b> loom stage
fd	frond
frt	to fertilization
fi	<b>f</b> lower initiation
fl	<b>f</b> lower stage
fr	to <b>f</b> ruit stage
frt	to fertilization
fry	<b>fry</b>
fs	<b>f</b> lowering <b>s</b> tage
ge	<b>g</b> eneration
ges	<b>g</b> estation
gm	to <b>g</b> ermination
go	gosner stage
gs	<b>g</b> rowing <b>s</b> ea <b>s</b> on
gts	gastrula stage
hbf	hours pre-fertilization

<b>hpe</b>	hours post emergence
<b>hpf</b>	<b>hours post fertilization</b>
<b>hph</b>	<b>hours post hatch</b>
<b>hpr</b>	hours post-release
<b>hv</b>	<b>harvest</b>
<b>ht</b>	until <b>hatch</b>
<b>i2</b>	intermolt to <b>2<sup>nd</sup></b> molt
<b>ins</b>	instar
<b>it</b>	intermolt to molt
<b>kh</b>	<b>knee-high</b> stage
<b>lfd</b>	leaf drop
<b>lgp</b>	to lag phase
<b>log</b>	to log phase
<b>ls</b>	leaf stage
<b>ls4</b>	<b>4-6 leaf</b> stage
<b>ls6</b>	<b>6 leaf</b> stage
<b>ls9</b>	<b>9-10 leaf</b> stage
<b>LSI</b>	Larval Stage Index
<b>lvp</b>	larva to pupa
<b>ma</b>	to <b>maturity</b>
<b>mpf</b>	minutes post fertilization
<b>mph</b>	months post hatch
<b>myp</b>	<b>Mysis</b> to <b>post-larvae</b>
<b>nf</b>	<b>Nieuwkoop-Faber</b> -stage
<b>pan</b>	<b>panicling</b> stage
<b>pd</b>	<b>1<sup>st</sup> pod</b> set
<b>pgm</b>	post germination
<b>pm</b>	<b>post molt</b>
<b>pr</b>	<b>priming</b> (The harvesting of ripened tobacco leaves)
<b>pro</b>	<b>propagation</b> stage
<b>rc</b>	ready for <b>consumption</b>
<b>slk</b>	to <b>silk</b> stage
<b>so</b>	<b>shooting</b> stage
<b>spref</b>	seconds before fertilization
<b>spf</b>	seconds post fertilization
<b>sst</b>	substage

<b>stg</b>	stage
<b>su</b>	summer
<b>swm</b>	<b>swim</b> -up
<b>tr</b>	1 <sup>st</sup> <b>trifoliate</b> leaf
<b>ts</b>	time to <b>tassle</b>
<b>ubi</b>	<b>until birth</b>
<b>vg</b>	<b>vegetative</b> stage
<b>wbh</b>	weeks pre-hatch
<b>wpe</b>	weeks post emergence
<b>wph</b>	weeks post hatch
<b>wphv</b>	Weeks pre harvest
<b>wps</b>	weeks post swim-up
<b>yc</b>	year class
<b>yph</b>	years post-hatch
<b>zm</b>	<b>zoeae-megalop</b>
<b>zmy</b>	<b>zoeae to mysis</b>
<b>-n</b>	negative values represent pretreatment times
<b>-x</b>	pretreatment time unknown
<b>/</b>	NOT TO BE USED AFTER 10/15/99, USE QUALITATIVE CODES (ABOVE) INSTEAD: used when the duration is qualitative rather than quantitative; information is recorded as text in the Remarks (eg., 12 <sup>th</sup> egg after hatch but not end of study)

## Appendix J. Exposure Type Codes

Code	Definition
<b>D</b> see Appendix J.1	<b>Diet</b> - exposure through consumption; includes diet and/or water intake; this code will be automatically assigned if one of the diet categories from Appendix J.1 is used
<b>I</b> see Appendix J.2	<b>Injection</b> -insertion of the toxicant into the skin, vessels, muscle, subcutaneous tissue, or any body cavity; this code will be automatically assigned if one of the injection categories from Appendix J.2 is used
<b>M</b> see Appendix J.3	<b>Multiple-exposure</b> to the toxicant through two or more different routes.
see Appendix J.4	<b>ACQUIRE ONLY</b> Exposure Type Codes
<b>NR</b>	Exposure type is <b>Not Reported</b>
<b>T</b> see Appendix J.5	<b>Topical</b> - exposure includes dermal, eggshell, immersion or soaking; this code will be automatically assigned if one of the topical categories from Appendix J.4 is used
<b>V</b> see Appendix J.6	<b>Environmental</b> - exposure includes field in situ and specific application types as well as incidental exposures; this code will be automatically assigned if one of the environmental categories from Appendix J.5 is used

**Appendix J.1 Diet (D) Exposure Codes**

<b>Code</b>	<b>Definition</b>
<b>DT</b>	diet, unspecified
<b>FD</b>	chemical incorporated into the food
<b>DR</b>	chemical incorporated into the water
<b>CH</b>	choice of treated or untreated food or water
<b>GV</b>	gavage
<b>GE</b>	Gestational (Exposed during gestation)
<b>LC</b>	Lactation (Exposed via mother's milk)
<b>OR</b>	oral via capsule

**Appendix J.2 Injection (I) Codes**

<b>Code</b>	<b>Definition</b>
<b>IJ</b>	injection, unspecified
<b>IA</b>	Intra-arterial (injected via the artery)
<b>IB</b>	Egg albumin injection
<b>IC</b>	Air sac (air cell) injection
<b>IG</b>	intragastrical (digestive system)
<b>IH</b>	intrahemocoel
<b>IM</b>	intramuscular
<b>IP</b>	intraperitoneal
<b>IL</b>	intra placental
<b>IR</b>	intraprostomial
<b>IS</b>	intrasegmentally (insects)
<b>IE</b>	intratesticular
<b>IV</b>	intravenous
<b>OP</b>	Osmotic pump, subcutaneous pump, peristaltic pump, mini pump
<b>SC</b>	subcutaneous
<b>SD</b>	subdermal
<b>YK</b>	yolk

### Appendix J.3 Multiple (M) Application Codes

Code	Definition
MU	multiple routes between application groups (e.g. dermal and inhalation)

### Appendix J.4 AQUIRE ONLY Exposure Type Codes

#### AQUIRE Lab Exposure Types (EXP TYP)

Code	Definition
[C]	Topical Exposure (Use specific code from App. J.5)
[D]	Diet or Oral exposure (includes simultaneous diet and water exposure) (Use specific code from App. J.1)
F	Flow-through
[I]	Injection (Use specific code from App. J.2)
L	Leaching (used for leachate and sediment exposures, if water conc reported)
P	Pulse (intermittent or fluctuating dosing)
R	Renewal
S	Static (recirculating exposures are noted in <u>Exp Design</u> ); algae tests where the time is $\leq 24$ hr, static may be assumed, and coded as such by the reviewer

#### AQUIRE Field Exposure Types (EXP TYP)

Code	Definition
B	Tidal
[D]	Diet (Use specific code from App. J.1)
E	Lentic (static water system without measurable flow rate, e.g. ponds, lakes, troughs, irrigation ditches)
I	Injection
O	Lotic (flowing water system, e.g. streams)

[ ] = Old code. The codes will require maintenance to update records with new codes.

### Appendix J.5 Topical (T) Application Codes



Code	Definition
DM	dermal
MM	immersion
OC	ocular
PC	percutaneous
SA	surface area dose
SH	eggshell
TP	topical, general

### Appendix J.6 Environmental (V) Exposure Codes [Also AQUIRE Field Test AP Type]

Code	Definition
AE	aerial (unknown type)
AG	aerial-granular
AS	aerial spray application
CM	culture medium application
DA	direct application
DU	dusted
DW	dropwise application
EN	environmental, unspecified
FS	foliar spray
FU	fumigation
GG	ground granular
GM	growth medium application
GS	ground spray
HP	hydroponic solution application

Code	Definition
HS	hand spray
IN	in situ
MI	misted
MT	multiple routes within environmental exposures, e.g. Aerial spray and soil slurry to the same plots.
PR	present in soil
PT	painted
PU	pump
SO	dipped or soaked
SP	spray
SS	soil slurry
WA	watered

## Appendix K. Application Frequency Codes

Code	Definition
<b>ADL</b>	<b>Ad libitum</b> ; without limit or restraint
<b>CON</b>	<b>Continual</b> ; non-pulsed
<b>D/WK, 10-13WK</b>	X times per week for 10 to 13 weeks
<b>DLY</b>	<b>Daily</b> ; dosing regime not specified
<b>DLY for X D</b>	Daily for X days
<b>DLY for 5 D</b>	Daily for 5 days
<b>DLY for 2 H</b>	Daily for 2 hours
<b>EOD</b>	<b>Every other day</b>
<b>E X D</b>	<b>Every X days</b>
<b>E X H</b>	<b>Every X hours</b>
<b>E x H for 20 D</b>	Every X hours for 20 days
<b>E x MI</b>	Every x minutes
<b>E X WK</b>	<b>Every X weeks</b>
<b>G per D</b>	<b>Grams per day</b>
<b>H</b>	Hour
<b>HED</b>	X hours every day
<b>X H E12H</b>	X hours every 12 hours
<b>X H E3D</b>	X hours every 3 days
<b>X H EOD</b>	X hours every other day
<b>X H per D</b>	X hours per day
<b>H/D for 8 D</b>	X hours per day for 8 days
<b>X H WKY</b>	X hours weekly
<b>X MI per D</b>	X minutes per day
<b>IN</b>	<b>in situ</b>
<b>RES</b>	<b>Restricted</b>
<b>STG</b>	<b>Stage</b>
<b>WKY</b>	<b>Weekly</b>
<b>X</b>	Dosed x time(s) per study period; e.g. 1 time = 1X
<b>X E 3.3-5 D</b>	X times every 3.3 to 5 days
<b>X E 7-15 D</b>	X times every 7 to 15 days
<b>X for 1 H</b>	X times for 1 hour
<b>X for 1 MI</b>	X times for 1 minute

Code	Definition
<b>X for 10 MI</b>	X times for 10 minutes
<b>X for 12 H</b>	X times for 12 hours
<b>X for 15 MI</b>	X times for 15 minutes
<b>X for 2 D</b>	X times for 2 days
<b>X for 2 H</b>	X times for 2 hours
<b>X for 20 MI</b>	X times for 20 minutes
<b>X for 24 H</b>	X times for 24 hours
<b>X for 3 H</b>	X times for 3 hours
<b>X for 3.5 H</b>	X times for 3.5 hours
<b>X for 30 MI</b>	X times for 30 minutes
<b>X for 5 H</b>	X times for 5 hours
<b>X for 5 MI</b>	X times for 5 minutes
<b>X for 6 H</b>	X times for 6 hours
<b>X for 60 MI</b>	X times for 60 minutes
<b>X for 84 H</b>	X times for 84 hours
<b>X for 96 H</b>	X times for 96 hours
<b>X in 12 H</b>	X times in 12 hours
<b>in 14 D</b>	X times in 14 days
<b>X in 24-72 H</b>	X times in 24 to 72 hours
<b>X in 48 H</b>	X times in 48 hours
<b>X per FI</b>	<b>X times per flower initiation</b>
<b>X per h</b>	<b>X times per hour</b>
<b>X per d</b>	<b>X times per day</b>
<b>X per wk</b>	<b>X times per week</b>
<b>X per mo</b>	<b>X times per month</b>
<b>X per yr</b>	<b>X times per year</b>
<b>X per 12d</b>	<b>X times per 12 days</b>
<b>X per 14d</b>	<b>X times per 14 days</b>
<b>X per 24 H</b>	X times per 24 hours
<b>X per 2d</b>	<b>X times per 2 days</b>
<b>X per 2 wk</b>	<b>X times per 2 weeks</b>
<b>X per 3d</b>	<b>X times per 3 days</b>
<b>X per 4d</b>	<b>X times per 4 days</b>
<b>X per 5 D</b>	X times per 5 days
<b>X per 6 WK</b>	X times per 6 weeks

Code	Definition
<b>X per D, 10 X</b>	X times per day, 10 times
<b>X per D, 1 WK</b>	X times per day for 1 week
<b>X per D, 6 D/WK</b>	X times per day, 6 days per week
<b>X per wk/10 wk</b>	X times per week per 10 weeks
<b>X, 1X/D</b>	<b>X</b> times, <b>1 time</b> per <b>day</b>
<b>X, 1X/Y</b>	<b>X</b> times, <b>1 time</b> per <b>year</b>
<b>X,1 X per 15 D</b>	X times, 1 time per 15 days
<b>X, 1X/2WK</b>	X times, 1 time per 2 weeks
<b>X, 1X/20 D</b>	X times, 1 time per 20 days
<b>X,1X per 3 D</b>	X times, 1 time per 3 days
<b>X, 1X/4WK</b>	X times, 1 time per 4 weeks
<b>X,1Xper9-13D</b>	X times, 1 time per 9-13 days
<b>X, 2X per WK</b>	X times, 2 times per week
<b>X,5X per WK</b>	X times, 5 times per week
<b>X,1 X E 15 D</b>	X times, 1 time every 15 days
<b>X, 2X in 14 H</b>	X times, 2 times in 14 hours
<b>X,24 H per 14 D</b>	X times, 24 hours per 14 days
<b>X,48H apt E14D</b>	X times, 48 hours apart every 14 days
<b>X, 96 H apart</b>	X times, 96 hours apart
<b>X/WK for 3 WK</b>	X times per week for 3 weeks
X/WK for 4 WK	x times per week for 4 weeks
<b>NR</b>	<b>Not Reported</b>

## Appendix L. Exposure Media Codes

Code	Definition
AGR	Agar
AQU	Aqueous
ART	Artificial soil (This includes soils that are created from individual soil components. For example, if clay, sand and organic matter are combined, as in OECD soils, these soils are coded as artificial.)
CUL	Culture Medium
FLT	Filter paper
HUM	Humus
HYP	Hydroponic
LIT	Litter
MAN	Manure
MIN	Mineral soil
MIX	Media Mixture (with comment)
NAT	Natural soil (This includes natural soils that are amended with nutrients.)
NONE	No substrate
NR	Not reported
OTH/	Other (with comment) Use this code when odd combinations of media are used and remark in Soil Information comments, i.e. 50/50 mixture of farina and peat
POP	Plaster of Paris
SED	Sediment
SLG	Sludge
UKS	Unspecified soil type

## Appendix M. Control Type and Dose ID Codes

Code	Definition
<b>B</b>	<b>Baseline or background control:</b> parameters of actual or representative test species measured before and after administration of test chemical, though not as part of the same test scenario. <b>Note:</b> pretreatment values, collected during the same test scenario as the observed responses, are recorded as exposure concentrations with a negative exposure duration; <u>not</u> as baseline control parameters.
<b>C</b>	<b>Concurrent control:</b> controls are run simultaneously with the exposure, e.g. in the laboratory where a chemical free test chamber is used or in field studies where the control data are obtained upstream from the exposure data; also includes field tests where the controls are run in a separate system, i.e. pond A and pond B or field A and field B but the ponds are in the same geographic area and have similar media.
<b>D</b>	Exposure <b>D</b> ose level identifier
<b>E</b>	Endpoint link identifier
<b>H</b>	<b>Historical control:</b> applicable to natural field system testing, data collected prior to exposure often during an independent long-term survey of the area; see also <b>B - Baseline</b>
<b>K</b>	Data for control is presented but without accompanying methodology to identify procedures used
<b>M</b>	<b>Multiple controls</b> were reported, e.g. historic and concurrent
<b>NR</b>	<b>Not reported;</b> there is no information about presence or absence of controls in the publication
<b>O</b>	The ' <b>O</b> ' code should be used when a control is run in a different system (e.g. defined by different dilution water or soil properties) than the exposure treatments. This also includes laboratory studies where different solvents are used for control versus treatment (e.g. Water was used as a solvent for test compound, controls were injected with saline, or a blood sample from an unexposed female used for a control for an exposed male).
<b>P</b>	<b>Positive controls</b> were used
<b>R</b>	Range of doses
<b>V</b>	Carrier or solvent; organisms exposed to carrier or solvent as the only control
<b>Z</b>	Author states that no controls were used in the study

## Appendix N. Exposure Dose and Observation/Response Value Units

<b>a-amino N/24h</b>	alpha aminonitrogen per 24 hours	<b>ai g/100m2</b>	active ingredient grams per 100 square meters
<b>absrb</b>	absorbance	<b>AI g/305 m</b>	active ingredient grams per 305 meters
<b>act</b>	activity	<b>AI g/378 L</b>	active ingredient grams per 378 liters
<b>act/g pro</b>	activity per gram protein	<b>AI g/379 L</b>	active ingredient grams per 379 liters
<b>act/g TI</b>	activity per gram tissue	<b>ai l/ha</b>	active ingredient liters per hectare
<b>activ/noactiv</b>	activated to non-activated ratio	<b>AI kg/ha</b>	active ingredient kilograms per hectare
<b>acts/3 mi</b>	acts per 3 minutes	<b>AI kg/0.4 ha</b>	active ingredient kilograms per 0.4 hectares
<b>ad</b>	adults	<b>ai kg/379 l</b>	active ingredient kilograms per 379 liters
<b>ad/jv</b>	adults per juvenile	<b>AI kg/100 kg sd</b>	active ingredient kilograms per 100 kilograms seed
<b>ae lb/100 gal</b>	acid equivalent pounds per 100 gallons	<b>AI lb/acre</b>	active ingredient pounds per acre
<b>ae mg/kg</b>	acid equivalents milligrams per kilograms	<b>AI lb/100 gal</b>	active ingredient pounds per 100 gallons
<b>AI</b>	active ingredient; followed by the unit, e.g. AI kg/ha	<b>AI mg/0.1 m2</b>	active ingredient milligrams per 0.1 square meters
<b>AI g/cm of dbh</b>	active ingredient grams per centimeter of diameter breast height	<b>AI mg/1800 g</b>	active ingredient milligrams per 1800 grams
<b>AI g/eu</b>	active ingredient grams per experimental unit	<b>AI mg/cm2</b>	active ingredient milligrams per square centimeter
<b>AI g/kg plt</b>	active ingredient grams per kilogram pellet	<b>AI mg/d</b>	active ingredient milligrams per day
<b>ai g/kg sd</b>	active ingredient grams per kilogram seed	<b>AI mg/eu</b>	active ingredient milligrams per experimental unit
<b>AI g/m</b>	active ingredient grams per meter	<b>ai mg/kg</b>	active ingredient milligrams per kilogram
<b>ai g/m2</b>	active ingredient grams per square meter	<b>AI mg/kg bdwt/d</b>	active ingredient milligrams per kilograms body weight per day
<b>AI g/10kg sd</b>	Active ingredient gram per 10 kilograms seed	<b>AI mg/kg/d</b>	active ingredient milligrams per kilogram per day
<b>AI g/100 gal</b>	active ingredient grams per 100 gallons	<b>ai mg/kg org</b>	active ingredient milligrams per kilogram organism
<b>AI g/100 kg</b>	active ingredient grams per 100 kilograms	<b>ai mg/L</b>	active ingredient milligrams per liter
<b>AI g/100 L</b>	active ingredient grams per 100 liters		
<b>AI g/100 m</b>	active ingredient grams per 100 meters		

<b>ai mg/ml</b>	active ingredient milligrams per milliliter	<b>AI % w/w</b>	active ingredient percent weight per weight
<b>AI mg/m2</b>	active ingredient milligrams per square meter	<b>ALB:YK</b>	albumen to yolk ratio
<b>AI mg/org</b>	active ingredient milligrams per organism	<b>amend:unamend</b>	ratio of amended to unamended treatments
<b>AI mL/eu</b>	active ingredient milliliter per experimental unit	<b>AU</b>	arbitrary units
<b>AI ml/ha</b>	active ingredient milliliters per hectare	<b>B'</b>	Chromatid break
<b>AI ml/L</b>	active ingredient milliliters per liter	<b>B''</b>	Isochromatid break
<b>AI ml/378 L</b>	active ingredient milliliters per 378 liters	<b>BB unit</b>	BB unit
<b>AI ng</b>	active ingredient nanograms	<b>b/ml</b>	billions per milliliter
<b>AI ng/mg bdwt</b>	active ingredient nanograms per milligrams body weight	<b>beats/mi</b>	beats per minute
<b>AI ng/mL</b>	active ingredient nanograms per milliliter	<b>beats*ml/mi2</b>	beats * milliliter per square minutes
<b>ai oz/bu sd</b>	active ingredient ounces per bushel of seed	<b>bees/d</b>	bees per day
<b>AI ppb</b>	active ingredient parts per billion	<b>BO:LI</b>	bone to liver ratio
<b>ai ppm</b>	active ingredient parts per million	<b>Bq</b>	becquerels
<b>AI %/wt sd</b>	Active ingredient percent per weight seed	<b>Bq/g</b>	becquerels per gram
<b>ai ml/100m2</b>	active ingredient milliliters per 100 square meters	<b>Bq/L</b>	becquerels per liter
<b>AI ug</b>	active ingredient micrograms	<b>Bq/kg</b>	becquerels per kilogram
<b>ai ug/cm2</b>	active ingredient micrograms per square centimeter	<b>Bq/mg</b>	becquerels per milligram
<b>AI ug/g bdwt</b>	active ingredient micrograms per gram body weight	<b>Bq/ml</b>	becquerels per milliliter
<b>ai ug/g soil</b>	active ingredient micrograms per gram soil	<b>Bq/org</b>	becquerels per organism
<b>AI ug/L</b>	active ingredient micrograms per liter	<b>births</b>	births
<b>AI ug/ml</b>	active ingredient micrograms per milliliter	<b>bits</b>	bits
<b>AI ug/org</b>	active ingredient micrograms per organism	<b>BR:BL</b>	ratio of brain to blood
		<b>branches/org</b>	number of branches per organism
		<b>bt/mi</b>	beats per minute
		<b>BU</b>	Bessey Units
		<b>buds/org</b>	buds per organism
		<b>bushels</b>	bushels
		<b>bushel/acre</b>	bushels per acre
		<b>burrows</b>	burrows
		<b>C</b>	Centigrade, degrees
		<b>cal</b>	calories
		<b>cal/d</b>	calories per day
		<b>castings</b>	earthworm castings



<b>casts/eu</b>	casts per experimental unit	<b>CHLA:CHLB</b>	ratio of chlorophyll a to chlorophyll b
<b>casts/m2/d</b>	casts per square meter per day	<b>CI</b>	color index
<b>casts/pl</b>	casts per plot	<b>Ci/L</b>	curies per liter
<b>cc</b>	cocoons	<b>Ci/mol</b>	curies per mole
<b>cc O2 evolved</b>	cubic centimeters of oxygen evolved	<b>Ci/mmol</b>	curies per millimole
<b>cc/ad</b>	cocoons per adult	<b>clusters</b>	clusters
<b>cc/10 ad</b>	cocoons per 10 adults	<b>clutches</b>	clutches
<b>cc/eu</b>	cocoons per experimental unit	<b>cm</b>	centimeter
<b>cc/cntr</b>	cocoons per container	<b>cm/d</b>	centimeters per day
<b>cc/org</b>	cocoons per organism	<b>cm/g soil</b>	centimeters per gram soil
<b>cc/org/8wk</b>	cocoons per organism per 8 weeks	<b>cm/g bdwt/h</b>	centimeters per gram bodyweight per hour
<b>cc/org/wk</b>	cocoons per organism per week	<b>cm H2O</b>	centimeters of water
<b>cc/sad</b>	cocoons per surviving adult	<b>cm/cm3</b>	centimeters per cubic centimeter
<b>cc/unit</b>	cocoons per unit	<b>cm2</b>	centimeters squared
<b>cells</b>	cells	<b>cm2/kg</b>	centimeters squared per kilogram
<b>cells/1e+6</b>	cells per 1 X 10 +6 cells	<b>cm2/org</b>	centimeters squared per organism
<b>cells/50 mg</b>	cells per 50 milligrams	<b>cm2/100bees</b>	centimeters squared per 100 bees
<b>cells/100 clm</b>	cells per 100 coelomocytes	<b>cm3</b>	cubic centimeters
<b>cells/area</b>	cells per area	<b>cm3/4L</b>	cubic centimeters per 4 liters
<b>cells/mg TI</b>	cells per milligram tissue	<b>cm3/eu</b>	cubic centimeters per experimental unit
<b>cell/mi x10x3</b>	cells per minute x10x3	<b>cm3/hL</b>	cubic centimeters per hectoliter
<b>cells/ml</b>	cells per milliliter	<b>cm3 O2/g/h</b>	cubic centimeters of O2 per gram per hour
<b>cells/mm2</b>	cells per square millimeter	<b>cm/wk</b>	centimeters per week
<b>cell/mm3</b>	cells per cubic millimeter	<b>cmol/kg</b>	centimoles of charges per kilogram
<b>cells/mm</b>	<b>cortex</b> cells per millimeter cortex	<b>cpm</b>	counts per minute
<b>cells/mm</b>	<b>folium</b> cells per millimeter folium	<b>cpm 1e-4</b>	counts per minute * 1 X 10-4
<b>cell:nuclei</b>	ratio of cells to nuclei	<b>cpm X 1000</b>	counts per minute X 1000
<b>cells/TI</b>	cells per tissue	<b>cpm/1e+5 cells</b>	counts per minute per 1X10+5 cells
<b>cell/u.a</b>	cells per unit area		
<b>cellx10x2/ul</b>	cells x10x2 per microliter		
<b>cell/8 srtl cel</b>	cells per 8 Sertoli cells		
<b>cfu/mg</b>	colony forming units per milligram		
<b>chem/d</b>	chemical per day		

<b>cpm/cc</b>	counts per minute per cocoon	<b>dpm/167 mg TI</b>	disintegrations per minute per 167 milligrams tissue
<b>cpm/g TI</b>	counts per minute per gram tissue	<b>dpm/EU</b>	disintegrations per minute per experimental unit
<b>cpm/L</b>	counts per minute per liter	<b>dpm/g</b>	disintegrations per minute per gram of tissue
<b>cpm/mg</b>	counts per minute per milligram	<b>dpm/g*100</b>	disintegrations per minute per gram*100
<b>cpm/mg DNA</b>	counts per minute per milligram DNA	<b>dpm/800g soil</b>	disintegrations per minute per 800 grams of soil
<b>cpm/mg pro</b>	counts per minute per milligram protein	<b>dpm/mg</b>	disintegrations per minute per milligram
<b>cpm/mg RNA</b>	counts per minute per milligram RNA	<b>dpm/mg FA</b>	disintegrations per minute per milligram fatty acid
<b>cpm/mg UA</b>	counts per minute per milligram uronic acid	<b>dpm/mg GH</b>	disintegrations per minute per milligram growth hormone
<b>cpm/ml</b>	counts per minute per millimeter	<b>dpm/mg GH*100</b>	disintegrations per minute per milligram growth hormone*100
<b>cpm/org</b>	counts per minute per organism	<b>dpm/mg pro</b>	disintegrations per minute per milligram protein
<b>CRB:BR</b>	ratio of cerebellum to brain	<b>dpm/ml</b>	disintegrations per minute per milliliter
<b>CRM:BR</b>	ration of cerebrum to brain	<b>dpm/n</b>	disintegrations per minute per N
<b>cRNA/mgRNA/DNA</b>	(counts per minute RNA per milligram RNA) per milligram DNA	<b>dpm treat:cntl</b>	ration of disintegrations per minute treated to control
<b>cwt/acre</b>	hundredweights per acre	<b>Draize score</b>	Draize score
<b>CWU</b>	CW units	<b>dS/m</b>	deciSiemens per meter
<b>cyc/deg</b>	cycles per degree	<b>e/100hd</b>	eggs per 100 hen days
<b>d</b>	day	<b>e/hd</b>	eggs per hen day
<b>DB/mg pro</b>	lipid aliphatic double bounds per milligram protein	<b>e/org</b>	eggs per organism
<b>dead:live</b>	ratio of dead to live organisms	<b>e/org/d</b>	eggs per organism per day
<b>degree</b>	degree	<b>e/org/wk</b>	eggs per organism per week
<b>divisions/cell</b>	divisions per cell	<b>ea/eu</b>	ears per experimental unit
<b>dm2</b>	decimeters squared	<b>egg cap/org</b>	egg capsules per organism
<b>dm3/ha</b>	cubic decimeter per hectare	<b>eggs</b>	egg(s)
<b>DNA:protein</b>	DNA to protein ratio	<b>eggs/BDAY</b>	eggs per bird-day
<b>DNA:RNA</b>	DNA to RNA ratio	<b>eggs/d</b>	eggs per day
<b>dpm</b>	disintegrations per minute	<b>eggs/fm</b>	eggs per female
<b>dpm 1e-3/ml</b>	disintegrations per minute * 1 X 10 <sup>-3</sup> per milliliter		

<b>eggs/fm/d</b>	eggs per female per week	<b>fmol/mg</b>	femtomol per milligram
<b>eggs/fm/wk</b>	eggs per female per week	<b>fmol/mg pro</b>	femtomol per milligram protein
<b>eggs/100 ad</b>	eggs per 100 adults	<b>fr</b>	frames (bees)
<b>eggs/8 wks</b>	eggs per 8 weeks	<b>FU/g</b>	fluorescence units per gram
<b>eggs/org</b>	eggs per organism		
<b>eggs/org/d</b>	eggs per organism per day	<b>G'</b>	Chromatid gap
<b>egg/org/wk</b>	eggs per organism per week	<b>G''</b>	Isochromatid gap
<b>eggs/pair</b>	eggs per pair	<b>g</b>	grams
<b>eggs/raft</b>	eggs per raft	<b>g%</b>	gram percent
<b>em/FM</b>	embryos per female	<b>g% w/v</b>	gram percent on a weight per volume basis
<b>eggs/fm/8 wk</b>	eggs per female per 8 weeks	<b>g/0.25 acre</b>	grams per 0.25 acres
<b>enz act</b>	enzyme activity or enzyme activity unit	<b>g/0.5 m2</b>	grams per 0.5 meters squared
<b>enz act/mg</b>	enzyme activity per milligram	<b>g/100 cm3</b>	grams per 100 cubic centimeters
<b>eq/l</b>	equivalents per liter	<b>g/100l</b>	grams per 100 liters
<b>eu</b>	enzyme unit	<b>g/100g</b>	grams per 100 grams
<b>EU/g</b>	enzyme unit (amount of enzyme needed to catalyze)/g	<b>g/100g BW</b>	grams per 100 grams body weight
		<b>g/100g BW/d</b>	grams per 100 grams body weight per day
<b>failures</b>	failures	<b>g/100g bdwt/h</b>	grams per 100 grams per bodyweight/hour
<b>FD:Gain</b>	ratio of weight of food consumed to weight gained	<b>g/100g org</b>	grams per 100 grams organism
<b>FD:WTR</b>	food to water ratio	<b>g/100 g sd</b>	grams per 100 grams seed
<b>female</b>	female	<b>g/100kg org</b>	grams per 100 kilograms organism
<b>FER</b>	feed efficiency ratio		
<b>fl</b>	femtoliters	<b>g/d/100 g bdwt</b>	grams per day per 100 grams body weight
<b>FM:ML</b>	females to males ratio	<b>g/d/100kg org</b>	grams per day per 100 kilograms organism
<b>FT:PLC</b>	fetus to placenta ratio		
<b>fet</b>	fetuses	<b>g/100 le</b>	grams per 100 leaves
<b>fetuses/litter</b>	fetuses per litter	<b>g/100 L</b>	grams per 100 liters
<b>final:initial</b>	ratio of initial parameter to final parameter	<b>g/100ml</b>	grams per 100 milliliters
<b>fledge/pair</b>	fledglings per pair or young fledged per pair	<b>g/100 sd</b>	grams per 100 seeds
		<b>g/100 stl</b>	grams per 100 stolons
<b>fm</b>	females	<b>g/1000 ft3</b>	grams per 1000 cubic feet
<b>fm/lit</b>	females per litter	<b>g/1000g</b>	grams per 1000 grams
<b>fmol</b>	femtomol	<b>g/1000gr</b>	grams per 1000 grains

<b>g/13.125 ft2</b>	grams per 13.125 square feet	<b>g/g bdwt/d</b>	grams per gram body weight per day
<b>g/15 cm</b>	grams per 15 centimeters	<b>g/g dry humus</b>	grams per gram dry humus
<b>g/1.8kg sd</b>	grams per 1.8 kilograms seed	<b>g/g fd</b>	grams per gram food
<b>g/200 m2</b>	grams per 200 square meters	<b>g/g org</b>	grams per gram organism
<b>g/2500cm2</b>	grams per 2500 centimeters squared	<b>g GAIN/kg fd</b>	grams weight gained per kilogram food
<b>g/4 d</b>	grams per 4 days	<b>g/h</b>	grams per hour
<b>g/400m</b>	grams per 400 meters	<b>g H2O/dm2/h</b>	grams H2O per squared decameter per hour
<b>g/5 kg soil</b>	grams per 5 kilograms soil	<b>g/ha</b>	grams per hectare
<b>g/5 m2</b>	grams per 5 meters squared	<b>g/hd</b>	grams per hen day
<b>g/50 org</b>	grams per 50 organisms	<b>g/jv</b>	grams per juvenile
<b>g/500 ml</b>	grams per 500 milliliters	<b>g/kg</b>	grams per kilogram
<b>g/70d</b>	grams per 70 days	<b>g/kg/d</b>	grams per kilogram per day
<b>g/acre</b>	grams per acre	<b>g/kg bdwt</b>	grams per kilogram body weight
<b>g/BDAY</b>	grams per bird-day	<b>g/kg bdwt/d</b>	grams per kilogram body weight per dry soil
<b>g/bdwt e0.75</b>	grams per body weight * 1e0.75	<b>g/kg feed</b>	grams per kilogram of feed
<b>g/bee</b>	grams per bee	<b>g/kg fd</b>	grams per kilogram food
<b>g/cc</b>	grams per cocoon	<b>g/kg sd</b>	grams per kilograms seed
<b>g/cm</b>	grams per centimeter	<b>g/kg soil</b>	grams per kilogram soil
<b>g/cm2</b>	grams per square centimeter	<b>g/1.2 kg soil</b>	grams per 1.2 kilogram soil
<b>g/ctnr</b>	grams per experimental container	<b>g/1.4 kg soil</b>	grams per 1.4 kilogram soil
<b>g/d</b>	grams per day	<b>g/1.6 kg soil</b>	grams per 1.6 kilogram soil
<b>g/d/org</b>	grams per day per organism	<b>g/1.8 kg soil</b>	grams per 1.8 kilogram soil
<b>g/d/wght</b>	grams per day per weight	<b>g/L</b>	grams per liter
<b>g/dl</b>	grams per deciliter	<b>g/13.5 L</b>	grams per 13.5 liters
<b>g/eu</b>	grams per experimental unit	<b>g/LE</b>	grams per leaf
<b>g/eu/d</b>	grams per experimental unit per day	<b>g/m</b>	grams per meter
<b>g/fed</b>	grams per feddan (1 feddan = 1.038 acres)	<b>g/m2</b>	grams per square meter
<b>g/fish</b>	grams per fish	<b>g/m3</b>	grams per cubic meter
<b>g/fruit</b>	grams per fruit	<b>g/org</b>	grams per organism
<b>g/ft2</b>	grams per square foot	<b>g/org/d</b>	grams per organism per day
<b>g/g bdwt</b>	grams per gram body weight	<b>g/org/42 d</b>	grams per organism per 42 days
		<b>g/org/eu</b>	grams per organism per experimental unit
		<b>g/org/wk</b>	grams per organism per week

<b>g/org/yr</b>	grams per organism per year	<b>IU</b>	International Units (One IU is the amount of enzyme consuming or forming 1 umol substrate or 1 umol product per minute under standard conditions.) May also be noted as "SI units" (Système International d'unités)
<b>g/quadrant</b>	grams per quadrant		
<b>g/sample</b>	grams per sample		
<b>g/shell</b>	grams per shell		
<b>g/ton</b>	grams per ton		
<b>g/ug</b>	grams per microgram	<b>IU/g</b>	International Units per gram
<b>g/wk</b>	grams per week	<b>IU/g TI</b>	International Units per gram tissue
<b>g GAIN/g fd/d</b>	grams weight gained per gram food per day	<b>IU/l</b>	International Units per liter
<b>g TI/100 g bdwt</b>	grams tissue per 100 grams bodyweight	<b>IU/kg</b>	International Units per kilogram
<b>Gain:FD</b>	ratio of weight gained to weight of food consumed	<b>IU/kg bdwt</b>	International units per kilogram body weight
<b>gal/100 gal</b>	gallons per 100 gallons	<b>IU/mg</b>	International Units per milligram
<b>gal/acre</b>	gallons per acre	<b>IU/mg Hb</b>	International units per milligram hemoglobin
<b>gamma/day</b>	gamma/day (Von Bertalanffy growth)	<b>IU/mg pro</b>	International Units per milligrams protein
<b>gamma/g TI</b>	gamma counts per gram tissue	<b>IU/mg TI</b>	International units per milligram tissue
<b>gg</b>	gamma gamma	<b>IU/ml</b>	International Units per milliliter
<b>gila:neuron</b>	gila to neuron ratio	<b>IU/orgwt</b>	International Units per organ weight
<b>grade</b>	grade		
<b>grain/panicle</b>	grains per panicle		
<b>h</b>	hour		
<b>H'</b>	Shannon-Weiner Diversity index	<b>J/beat</b>	Joules per beat
<b>HA units</b>	Hemagglutinating units	<b>J/d</b>	Joules per day
<b>hatchability</b>	hatchability	<b>jv</b>	juveniles
<b>hsk:gr</b>	ratio plant husk to grain	<b>jv/ad</b>	juveniles per adult
<b>Hz</b>	Hertz	<b>jv/cc</b>	juveniles per cocoon
<b>Hz/s</b>	Hertz per second	<b>jv/cntr</b>	juveniles per container
		<b>jv/eu</b>	juveniles per experimental unit
<b>in</b>	inches	<b>jv/fm</b>	juveniles per female
<b>in2</b>	inches squared	<b>jv/ftcc</b>	juveniles per fertile cocoon
<b>inclusion</b>	internuclear inclusion body	<b>jv/lit</b>	juveniles per litter
<b>index</b>	index	<b>jv/mated fm</b>	juvenile per mated female
		<b>jv/nest</b>	juveniles per nest

<b>jv/org/wk</b>	juveniles per organisms per week	<b>kg/hL</b>	kilograms per hektoliter
		<b>kg/L</b>	kilograms per liter
<b>jv/org</b>	juveniles per organism	<b>kg/mi2/mo</b>	kilograms per square mile per month
<b>k2/d</b>	elimination rate constant 2 per day	<b>kg/mm</b>	kilograms per millimeter
<b>K units</b>	Karmen units	<b>kg/mu</b>	kilograms per mu
<b>KA units</b>	King/Armstrong units	<b>kg/org</b>	kilograms per organism
<b>KA/g</b>	King/Armstrong units per gram	<b>kg/org/d</b>	kilograms per organism per day
<b>ka/d</b>	elimination rate constant a per day	<b>kg/wk</b>	kilograms per week
		<b>kJ/d/org</b>	kilojoules per day per organism
<b>kBq</b>	kilobecquerels	<b>kmol/m3</b>	kilomoles per cubic meter
<b>kBq/L</b>	kilobecquerels per liter	<b>KA/100ml</b>	king/armstrong units per 100 milliliters
<b>kBq/dm3</b>	kilobecquerels per cubic decimeter	<b>KI:BR</b>	kidney to brain ratio
<b>kBq/eu</b>	kilobecquerels per experimental unit	<b>Kunit/ml</b>	k unit per milliliter
<b>kBq/ml</b>	kilobecquerels per milliliter		
<b>K/ml</b>	karmen units per milliliter	<b>L</b>	liters
<b>kcal</b>	kilocalories	<b>lamellae/axon</b>	lamellae per axon
<b>kcal/d</b>	kilocalories per day	<b>layers</b>	layers
<b>kcal/100g</b>	kilocalories per 100 grams	<b>l/24 h</b>	liters per 24 hours
<b>kg</b>	kilograms	<b>L/ha</b>	liters per hectare
<b>kg ae/ha</b>	kilograms acid equivalent per hectare	<b>l/l</b>	liter per liter
		<b>l/m2</b>	liters per square meter
<b>kg conc/d</b>	kilograms of concentrate per day	<b>lb</b>	pounds
<b>kg plt/ha</b>	kilograms pellet per hectare	<b>lb/11 gal/acre</b>	pound per 11 gallons per acre
<b>kg silage/d</b>	kilograms of silage per day	<b>lb/90 ft2</b>	pounds per 90 square feet
<b>kg/0.5 m2</b>	kilograms per 0.5 square meters	<b>lb/acre</b>	pounds per acre
		<b>lb/ac ft</b>	pounds per acre foot
<b>kg/11 m</b>	kilograms per 11 meters	<b>lbs ae/ac</b>	pounds acid equivalent per acre
<b>kg/100 m2</b>	kilograms per 100 square meters	<b>lb/cwt sd</b>	pounds per hundred weight seed
<b>kg/ac</b>	kilograms per acre		
<b>kg/d</b>	kilograms per day	<b>lb/d</b>	pounds per day
<b>kg/eu</b>	kilograms per experimental unit	<b>lb/eu</b>	pounds per experimental unit
<b>kg/fed</b>	kilograms per feddan (1 feddan = 1.038 acres)	<b>lb/ft2</b>	pounds per square foot
<b>kg/ha</b>	kilograms per hectare	<b>lb/gal</b>	pounds per gallon

<b>lb/org/d</b>	pounds per organism per day	<b>meq</b>	milliequivalents
		<b>meq/g</b>	milliequivalents per gram
<b>lb/plot</b>	pounds per plot	<b>meq/kg</b>	milliequivalents per kilogram
<b>LGTH/s</b>	length per second		
<b>LGTH:THIK</b>	ratio of length to thickness	<b>meq/L</b>	milliequivalents per liter
<b>LI:BR</b>	liver to brain ratio	<b>meq/100 g</b>	milliequivalents per 100 grams
<b>L/1000 bu</b>	Liters per 1000 bushels		
<b>lit</b>	litters	<b>mg</b>	milligrams
<b>lit/pr</b>	litters per pair	<b>mg<sup>1/3</sup></b>	milligrams to 1/3 power
<b>litter %</b>	litter percent	<b>mg %</b>	milligrams percent
<b>ln(Wf/Wi)</b>	natural log(mean survivor weight/mean initial weight)	<b>mg at/L ***</b>	milligrams atom per liter ***Use mmol/L ***
<b>log rel</b>	log relative activity/intensity	<b>mg C/g OM</b>	milligrams carbon per gram organic matter
<b>log s</b>	log time in seconds	<b>mg CO2/h/g</b>	milligrams carbon dioxide per hour per gram
<b>log2</b>	log squared		
<b>log2 titers</b>	log2 titers	<b>mg CO2/hr/g ndl</b>	milligrams carbon dioxide per hour per gram of needles
<b>log 10 ug/g org</b>	log 10 micrograms per gram organism		
<b>LU:BR</b>	lung to brain ratio	<b>mg NH3/ g org</b>	milligrams ammonia per gram of organism
		<b>mg NH3/g org/h</b>	milligrams ammonia per gram of organism per hour
<b>M</b>	molar		
<b>m3</b>	cubic meters	<b>mg O2/g org</b>	milligrams oxygen per gram of organism
<b>male</b>	male	<b>mg O2/g org/h</b>	milligrams oxygen per gram of organism per hour
<b>maturity index</b>	maturity index		
<b>mBq</b>	millibecquerels	<b>mg P/100 g</b>	milligrams phosphorus per 100 grams
<b>mBq/ml</b>	millibecquerels per milliliter	<b>mg pro/g</b>	milligrams protein per gram
<b>mCi</b>	milliCuries	<b>mg urea /g org</b>	milligrams urea per gram of organism
<b>mCi</b>	microCurie per kilogram	<b>mg urea/g org/h</b>	milligrams urea per gram of organism per hour
<b>mCi mg</b>	milliCuries milligram		
<b>mCi/mg</b>	milliCuries per milligram	<b>mg/%</b>	milligrams per percent
<b>mCi/ml</b>	millicuries per milliliter	<b>mg/0/d</b>	milligrams per organism per day
<b>mCi/mmol</b>	milliCuries per millimoles	<b>mg/10 g bdwt</b>	milligrams per 10 grams body weight
<b>mg CO2/dm2/h</b>	milligrams carbon dioxide per squared decameter per hour		
<b>metric t/ha</b>	metric tons per hectare	<b>mg/100g</b>	milligrams per 100 grams
<b>mM</b>	milliMolar (millimoles per liter)	<b>mg/100g org</b>	milligrams per 100 grams organism
<b>m enz act/mg</b>	millienzyme activity per milligram	<b>mg/100g bw</b>	milligrams per 100 grams body weight

<b>mg/100g bw/d</b>	milligrams per 100 grams body weight per day	<b>mg/d/100 lbs</b>	milligrams per day per 100 pounds
<b>mg/100g sd</b>	milligrams per 100 grams seed	<b>mg/dl</b>	milligrams per deciliter
<b>mg/100kg org</b>	milligrams per 100 kilograms of organism	<b>mg/dm<sup>2</sup>/h</b>	milligrams per square decimeter per hour
<b>mg/100 lbs</b>	milligrams per 100 pounds	<b>mg/dm<sup>3</sup></b>	milligrams per cubed decimeter
<b>mg/100lb/d</b>	milligrams per 100 pounds per day	<b>mg/dose</b>	milligrams per dose
<b>mg/100 mg TI</b>	milligrams per 100 milligrams tissue	<b>mg/eu</b>	milligrams per experimental unit
<b>mg/100ml</b>	milligrams per 100 milliliters	<b>mg/fish</b>	milligrams per fish
<b>mg/10g</b>	milligrams per 10 grams	<b>mg/g</b>	milligrams per gram
<b>mg/10g org</b>	milligrams per 10 grams organism	<b>mg/g ash</b>	milligrams per gram ash
<b>mg/12h</b>	milligrams per 12 hours	<b>mg/g bdwt</b>	milligrams per gram body weight
<b>mg/24h</b>	milligrams per 24 hours	<b>mg/g/ clay</b>	milligrams per gram clay
<b>mg/24h/kg</b>	milligrams per 24 hours per kilogram	<b>mg/g CRTN</b>	milligrams per gram creatinine
<b>mg/3 kg</b>	milligrams per 3 kilograms	<b>mg/g fd</b>	milligrams per gram food
<b>mg/454g</b>	milligrams per 454 grams	<b>mg/g fluid</b>	milligrams per gram fluid
<b>mg/500 ml</b>	milligrams per 500 milliliters	<b>mg/g humus</b>	milligrams per gram humus
<b>mg/70g</b>	milligrams per 70 grams	<b>mg/g N</b>	milligrams per gram nitrogen
<b>mg/bee</b>	milligrams per bee	<b>mg/g org</b>	milligrams per gram of organism
<b>mg/cc</b>	milligrams per cocoon	<b>mg/g pod</b>	milligrams per gram of pod
<b>mg/cntr</b>	milligrams per container	<b>mg/g soil</b>	milligrams per gram of soil
<b>mg/cm</b>	milligrams per centimeter	<b>mg/g/d</b>	milligrams per gram per day
<b>mg/cm<sup>2</sup></b>	milligrams per square centimeter	<b>mg/g MIT</b>	micrograms per gram mitochondria
<b>mg/cm<sup>2</sup>*torr</b>	milligrams per square centimeter X Torr	<b>mg/g pro</b>	milligrams per gram protein
<b>mg/cm<sup>2</sup>/d</b>	milligrams per square centimeter per day	<b>mg/g TI</b>	milligrams per gram tissue
<b>mg/cm<sup>3</sup></b>	milligrams per cubic centimeter	<b>mg/g TI/h</b>	milligrams per gram tissue per hour
<b>mg/d</b>	milligrams per day	<b>mg/gland/g bdwt</b>	milligrams per gland per gram body weight
<b>mg/d/bdwt</b>	milligrams per day per body weight	<b>mg/h</b>	milligrams per hour
<b>mg/d/wght</b>	milligrams per day per weight	<b>mg/h/g bdwt</b>	milligrams per hour per gram body weight
<b>mg/d/100 mg org</b>	milligrams per day per 100 grams organisms	<b>mg/ha</b>	milligrams per hectare
		<b>mg H<sub>2</sub>O/d*cm<sup>2</sup>*T</b>	milligrams water per day*square centimeters*Torr



<b>mg H2O/d*cm2*torr</b>	milligrams water per day X square centimeter X Torr	<b>mg/kg wet wt</b>	milligrams per kilogram wet weight
<b>mg/in2/d</b>	milligrams per square inch per day	<b>mg/kg wt/d</b>	milligrams per kilogram weight per day
<b>mg/jv</b>	milligrams per juvenile	<b>mg/l</b>	milligrams per liter
<b>mg/kg</b>	milligrams per kilogram	<b>mg/L/d</b>	milligram per liter per day
<b>mg/kg bdwt</b>	milligrams per kilogram body weight	<b>mg/L media</b>	milligrams per liter media
<b>mg/kg bdwt/d</b>	milligrams per kilogram body weight per day	<b>mg/m3</b>	milligrams per cubic meter
<b>mg/kg bdwt/wk</b>	milligrams per kilogram body weight per week	<b>mg/mg</b>	milligrams per milligram
<b>mg/kg dw org/d</b>	milligrams per kilogram dry weight organism per day	<b>mg/mg node</b>	milligrams per milligram nodules
<b>mg/kg d soil</b>	milligrams per kilograms dry soil	<b>mg/mi</b>	milligrams per minute
<b>mg/kg diet</b>	milligrams per kilogram diet	<b>mg/ml</b>	milligrams per milliliter
<b>mg/kg dry wt</b>	milligrams per kilogram dry weight	<b>mg/mm2</b>	milligrams per square milliliter
<b>mg/kg egg</b>	milligrams per kilogram egg	<b>mg/org</b>	milligrams per organism
<b>mg/kg fd</b>	milligrams per kilogram food	<b>mg/org/d</b>	milligrams per organism per day
<b>mg/kg litter</b>	milligrams per kilogram litter	<b>mg/org/wk</b>	milligrams per organism per week
<b>mg/kg media</b>	milligrams per kilogram media	<b>mg N/100 ml</b>	milligrams nitrogen per 100 milliliter
<b>mg/kg org</b>	milligrams per kilogram organism	<b>mg/orwt</b>	milligrams per organ weight
<b>mg/kg soil</b>	milligrams per kilogram soil	<b>mg P/h/g TI</b>	milligrams phosphorus per hour per gram tissue
<b>mg/kg d soil</b>	milligrams per kilogram dry soil	<b>mg/quintal</b>	milligrams per quintal
<b>mg/kg TI</b>	micrograms per milligrams tissue	<b>mg/TI</b>	milligrams per tissue
<b>mg/kg/d</b>	milligrams per kilogram per day	<b>mg TI/g bdwt</b>	milligrams tissue per gram body weight
<b>mg/kg/fish</b>	milligrams per kilogram per fish	<b>mg TI/kg bdwt</b>	milligrams tissue per kilogram body weight
<b>mg/kg/h</b>	milligrams per kilograms per hour	<b>mg/wk</b>	milligrams per week
<b>mg/kg/L</b>	milligrams per kilogram per liter	<b>mg CO2/m2/sec</b>	milligrams carbon dioxide per squared meter per second
<b>mg/kg org/d</b>	milligrams per kilogram organism per day	<b>mg p/g</b>	milligrams protein per gram
<b>mg/kg/wk</b>	milligrams per kilogram per week	<b>mg%</b>	milligram %
<b>mg/kg wt</b>	milligrams per kilogram weight	<b>mg/vol</b>	milligrams per volume
		<b>mi</b>	minute
		<b>mi/12 h</b>	minutes per 12 hours
		<b>mi/d</b>	minutes per day
		<b>mi/org</b>	minutes per organism

<b>mi/nmol Rh</b>	minutes per nanomoles per nanomol rhodopsin	<b>ml/injection</b>	milliliters per injection
<b>micronaires</b>	micronaires	<b>ml/kg</b>	milliliters per kilogram
<b>microns</b>	microns	<b>ml/kg bdwt</b>	milliliters per kilograms body weight
<b>MK:SR</b>	milk to serum ratio	<b>ml/kg sd</b>	milliliters per kilograms seed
<b>ml</b>	milliliters	<b>ml/kg/d</b>	milliliters per kilogram per day
<b>ML</b>	males	<b>ml/kg org/d</b>	milliliters per kilogram organism per day
<b>ML/total</b>	males per total population	<b>ml/lit</b>	males per litter
<b>ml/10 L</b>	milliliter per 10 liters	<b>ml/mi/kg</b>	milliliters per minute per kilogram
<b>ml/100g</b>	milliliters per 100 grams	<b>ml/mi/100g</b>	milliliters per minute per 100 grams
<b>ml/100g BW</b>	milliliters per 100 grams body weight	<b>ml CO2/mi</b>	milliliters CO2 per minute
<b>ml/100g bdwt/d</b>	milliliters per 100 grams body weight per day	<b>ml O2</b>	milliliters O2
<b>ml/100 m2</b>	milliliters per 100 square meters	<b>ml O2/mg TI</b>	milliliters O2 per milligram tissue
<b>ml/16h</b>	milliliters per 16 hours	<b>ml/org</b>	milliliters per organism
<b>ml/24 h</b>	milliliters per 24 hours	<b>ml/org/d</b>	milliliters per organism per day
<b>ml/50 kg seed</b>	milliliters per 50 kilograms seed	<b>ml/plot</b>	milliliters per plot
<b>ml/500 ml</b>	milliliters per 500 milliliters	<b>ml/quintal</b>	milliliters per quintal
<b>ml/70d</b>	milliliters per 70 days	<b>ml/wk</b>	milliliters per week
<b>ml/body wt</b>	milliliters per body weight	<b>mlcl/actin mlcl</b>	molecules per actin molecule
<b>ml/cntr</b>	milliliters per container	<b>ML:FM</b>	ratio of males to females
<b>ml/d</b>	milliliters per day	<b>mm</b>	millimeters
<b>ml/d/100g BW</b>	milliliters per day per 100 grams bodyweight	<b>mm x 100</b>	millimeters x 100
<b>ml/d/kg BW</b>	milliliters per day per kilogram body weight	<b>mmg</b>	micronmilligrams
<b>ml/d/org</b>	milliliters per day per organism	<b>mmHG</b>	millimeters mercury
<b>ml/eu</b>	milliliters per experimental unit	<b>mmHG/s</b>	millimeters mercury per second
<b>ml/eu/d</b>	milliliters per experimental unit per day	<b>mmHg/beat/mi*-3</b>	millimeters mercury per beat per minute * 1 X 10-3
<b>ml/g food</b>	milliliters per gram food	<b>mm/d</b>	millimeters per day
<b>ml/g/h</b>	milliliters per gram per hour	<b>mm/org</b>	millimeters per organism
<b>ml/gal</b>	milliliters per gallon	<b>mm/ug pro</b>	millimeters per microgram protein
<b>ml/h</b>	milliliters per hour	<b>mM/g</b>	millimolar per gram
<b>ml/h/g bdwt</b>	milliliters per hour per gram body weight		
<b>ml/ha</b>	milliliters per hectare		

<b>mM/kg bdwt</b>	millimoles per kilogram body weight	<b>mmol/mg/mi</b>	millimoles per milligram per minute
<b>mM/L</b>	millimoles per liter	<b>mmol/ml/h</b>	millimoles per milliliter per hour
<b>mm2</b>	square millimeters	<b>mmol NO2/kg</b>	millimoles nitrogen dioxide per kilogram
<b>mm2/mm3 X 1e-9</b>	square millimeters per cubic millimeter X 1 X 10 -9	<b>mmol H2O/m2/s</b>	millimoles water per square meter per second
<b>mm2/org/d</b>	square millimeters per organism per day	<b>mmu</b>	absolute milli-mass units
<b>mm3</b>	cubic millimeters (abbreviated in some literature as cmm)	<b>mo</b>	month
<b>mm3/100g d soil</b>	cubic millimeters per 100 grams dry soil	<b>mol</b>	moles
<b>mm3/dm3</b>	cubic millimeters per cubic decimeter	<b>mol/dm3</b>	moles per cubic decimeter
<b>mm3/L</b>	cubic millimeters per liter	<b>mol/egg</b>	moles per egg
<b>mm3/mg/h</b>	cubic millimeters per milligram per hour	<b>mol/L</b>	moles per liter
<b>mm3/mm3</b>	cubic millimeters per cubic millimeter	<b>mol/g</b>	moles per gram
<b>mmol</b>	millimoles	<b>mol/g soil</b>	moles per gram soil
<b>mmol/d</b>	millimoles per day	<b>mol/kg</b>	moles per kilogram
<b>mmol/g</b>	millimoles per gram	<b>mol/m3</b>	moles per cubic meter
<b>mmol/g dry wt</b>	millimoles per gram dry weight	<b>mol/ml</b>	moles per milliliter
<b>mmol/100 g</b>	millimoles per 100 grams	<b>mol/org</b>	moles per organism
<b>mmol/g food</b>	millimoles per gram food	<b>mol NO2/h/g</b>	moles NO2 per hour per gram
<b>mmol/h/g TI</b>	millimoles per hour per gram tissue	<b>molal</b>	molality
<b>mmol/kg</b>	millimoles per kilogram	<b>mole%</b>	mole percent
<b>mmol/kg/d</b>	millimoles per kilogram per day	<b>morph/org</b>	ectomycorrhizal morphotypes per organism
<b>mmol/kg/h</b>	millimoles per kilogram per hour	<b>mOsm</b>	milliosmoles
<b>mmol/kg soil</b>	millimoles per kilogram soil	<b>mosmols/l</b>	mosmoles (conc osmotic particles in solution) per liter
<b>mmol/L</b>	millimoles per liter (**equivalent to mg at/L)	<b>mouse unit/ml</b>	mouse units per milliliter
<b>mmol/L soil</b>	millimoles per liter soil	<b>MPa</b>	megaPascals
<b>mmol/m2/s</b>	millimoles per square meter per second	<b>mp/mg pro/15mi</b>	microsomal proteins/milligram protein per 15 minutes
<b>mmol/m3</b>	millimoles per cubic meter	<b>m/s</b>	meters per second
<b>mmol/mi/mg</b>	millimoles per minute per milligram	<b>ms</b>	milliseconds
		<b>mu</b>	milliunits
		<b>mU/d</b>	microunits per day
		<b>mU/g</b>	milliUnits per gram organism
		<b>mU/ml</b>	milliunit per milliliter

<b>mU/24 h/kg</b>	milliunit per 24 hours per kilogram	<b>ng/g diet</b>	nanograms per gram diet
<b>mu/mg</b>	milliunit per milligram	<b>ng/g dry wt</b>	nanograms per gram dry weight
<b>mu/mi/ml</b>	milliunit per minute per milliliter	<b>ng/g egg</b>	nanograms per gram egg
<b>mu/ml</b>	milliunit per milliliter	<b>ng/g TE</b>	nanograms per gram Toxic Equivalences
<b>mu/24 h</b>	milliunit per 24 hours	<b>ng/g TI</b>	nanograms per gram tissue
<b>mu/org</b>	milliunit per organism	<b>ng/g wet wt</b>	nanograms per gram wet weight
<b>mW</b>	milliwatts	<b>ng/g org</b>	nanograms per gram organism
<b>N</b>	normal	<b>ng/g TI/4 h</b>	nanograms per gram tissue per 4 hours
<b>NA</b>	not applicable	<b>ng/gland</b>	nanograms per gland
<b>nCi</b>	nanoCuries	<b>ng/kg</b>	nanograms per kilogram
<b>nCi/g org</b>	nanoCuries per gram organism	<b>ng/kg bdwt/d</b>	nanograms per kilogram body weight per day
<b>nCi/L</b>	nanoCuries per liter	<b>ng/kg/day</b>	nanograms per kilogram per day
<b>ng</b>	nanograms	<b>ng/kg fd</b>	nanograms per kilogram food
<b>ng days/L</b>	nanogram days per liter	<b>ng/kg/wk</b>	nanograms per kilogram per week
<b>ng/0.3 L</b>	nanograms per 0.3 liters	<b>ng/L</b>	nanograms per liter
<b>ng/100g bdwt</b>	nanograms per 100 grams per bodyweight	<b>ng/mg</b>	nanograms per milligram
<b>ng/24h</b>	nanograms per 24 hours	<b>ng/mg bdwt</b>	nanograms per milligram body weight
<b>ng ATP/g d soil</b>	nanograms ATP per grams dry soil	<b>ng/mg/mi</b>	nanograms per milligram per minute
<b>ngTEQ/kg bdwt/d</b>	nanograms Toxic Equivalency Concentration per kilogram body weight per day	<b>ng/mg fd</b>	nanograms per milligram food
<b>ng/cm</b>	nanograms per centimeter	<b>ng/mg pro</b>	nanograms per milligram protein
<b>ng/cm2</b>	nanograms per square centimeter	<b>ng/min</b>	nanograms per minute
<b>ng/d</b>	nanograms per day	<b>ng/mi/org</b>	nanograms per minute per organism
<b>ng/dl</b>	nanograms per deciliter	<b>ng/ml</b>	nanograms per milliliter
<b>ng/egg</b>	nanograms per egg	<b>ng/ml/h</b>	nanograms per milliliter per hour
<b>ng/eu</b>	nanograms per experimental unit	<b>ng/ml/mi</b>	nanograms per milliliter per minute
<b>ng/fish</b>	nanograms per fish	<b>ng/ml blood/d</b>	nanograms per milliliter blood per day
<b>ng/g</b>	nanograms per gram		
<b>ng/g bdwt</b>	nanograms per gram body weight		
<b>ng/g/d</b>	nanograms per gram per day		

<b>ng/mm/day</b>	nanograms per millimeter per day	<b>nmol/g ro/4 h</b>	nanomoles per gram root per 4 hours
<b>ng/org</b>	nanograms per organism	<b>nmol/g/30mi</b>	nanomoles per gram per 30 minutes
<b>ng/orwt</b>	nanograms per organ weight	<b>nmol/g/4 mi</b>	nanomoles per gram
<b>ng/TI</b>	nanograms per tissue	<b>nmol/g/mi</b>	nanomoles per gram per minute
<b>ng/ul</b>	nanograms per microliter	<b>nmol/g/h</b>	nanomoles per gram per hour
<b>nkcat/mg pro</b>	nanokatal per milligrams protein	<b>nmol/g humus</b>	nanomoles per gram per humus
<b>nl/L</b>	nanoliters per liter	<b>nmol/g soil</b>	nanomoles per gram soil
<b>nM</b>	nanomolar (nanomoles per liter)	<b>nmol/g TI</b>	nanomoles per gram tissue
<b>nM/L</b>	nanomolar per liter	<b>nmol/g TI/h</b>	nanomoles per g tissue per hour
<b>nM/g</b>	nanomolar per gram	<b>nmol/h/mg pro</b>	nanomoles per hour per milligram protein
<b>nM DSMN:uM LYSI</b>	nanomoles desmosine to micromoles lysine ratio	<b>nmol/h/ml RBC</b>	nanomoles per hour per milliliter red blood cells
<b>nmol</b>	nanomoles	<b>nmol/kg</b>	nanomoles per kilogram
<b>nmol/100 mg pro</b>	nanomoles per 100 milligrams protein	<b>nmol/kg bdwt</b>	nanomoles per kilogram body weight
<b>nmol/100mg pro/h</b>	nanomoles per 100 milligrams protein per hour	<b>nmol/kg/m</b>	nanomoles per kilogram per minute
<b>ng/100 ml</b>	nanograms per 100 milliliters	<b>nmol/l</b>	nanomoles per liter
<b>nmol ATP/g soil</b>	nanomoles adenosine triphosphate per gram of soil	<b>nmol/l RBC/h</b>	nanomoles per milliliter red blood cells per hour
<b>nmol DOPA/g/h</b>	nanomoles DOPA per gram per hour	<b>nmol MDA/mg pro</b>	nanomoles malonaldehyde per milligram protein
<b>nmol enz/hr</b>	nanomoles enzyme per hour	<b>nmol/mg</b>	nanomoles per milligram
<b>nmol H2O2/mi/mg</b>	nanomoles of peroxide per minute per milligram protein	<b>nmol/mg/h</b>	nanomoles per milligram per hour
<b>nmol/egg</b>	nanomoles per egg	<b>nmol/mg/15mi</b>	nanomoles per milligram protein per 15 minutes
<b>nmol mdhyde/g</b>	nanomoles malonaldehyde per gram	<b>nmol/ml</b>	nanomoles per milliliter
<b>nmol PBG/h/ml</b>	nanomoles porphobilinogen per hour per milliliter	<b>nmol/mg pro</b>	nanomoles per milligram protein
<b>nmol PBG/g TI/h</b>	nanomoles porphobilinogen per gram tissue per hour	<b>nmol/mg pro/mi</b>	nanomoles per milligram protein per minute
<b>nmol/g</b>	nanomoles per gram	<b>nmol/mg/20mi</b>	nanomoles per milligram per 20 minutes
<b>nmol/g pro</b>	nanomoles per gram protein	<b>nmol/mg/mi</b>	nanomoles per milligram per minute
<b>nmol/g pro/mi</b>	nanomoles per gram per protein per minute	<b>nmol/mgpro/30mi</b>	nanomoles per milligram protein per 30 minutes

<b>nmol/mg TI</b>	nanomoles per milligram tissue	<b>no/1000 um2</b>	number per 1000 square micrometers
<b>nmol/mi/g</b>	nanomoles per minute per gram	<b>no/1500x field</b>	number per 1500x field
<b>nmol/mi/mg</b>	nanomoles per minute per milligram	<b>no/5000 cells</b>	number per 5000 cells
<b>nmol/mi/mg pro</b>	nanomoles per minute per milligram protein	<b>no/area</b>	number per area
<b>nmol/mi/ml</b>	nanomoles per minute per milliliter	<b>no/cell</b>	number per cell
<b>nmol/mi/ml RBC</b>	nanomoles per minute per milliliter red blood cells	<b>no/cm</b>	number per centimeter
<b>nmol/mlpro/30mi</b>	nanomoles per milliliter protein per 30 minutes	<b>no/d</b>	number per day
		<b>no/eu</b>	number per experimental unit
		<b>no/fm</b>	number per female
		<b>no follicles</b>	number of follicles
		<b>no/g</b>	number per gram
<b>nmol/mol</b>	nanomoles per mole	<b>no/g soil</b>	number per gram soil
<b>nmol/nm p450/mi</b>	nanomoles per nanomole cytochrome P450 per minute	<b>no/h</b>	number per hour
		<b>no/ha</b>	number per hectare
<b>nmol/org/h</b>	nanomoles per organism per hour	<b>no/litter</b>	number of organisms per litter
<b>nmol/org/0.5 h</b>	nanomoles per organism per 0.5 hours	<b>no/m</b>	number per meter
<b>nmol/org/h</b>	nanomoles per organism per hour	<b>no/m2</b>	number per square meter
		<b>no/mm3</b>	number per cubic millimeter (also known as no/cmm)
<b>nmol/TI</b>	nanomoles per tissue	<b>no/mi</b>	number per minute
<b>no</b>	number	<b>no/mm2</b>	number per square millimeter
<b>no &gt;15cm</b>	number that are greater than 15 centimeters	<b>no/mm2 * 1e-4</b>	number per square millimeter X 1 X 10 <sup>-4</sup>
<b>no/1 mi</b>	number per 1 minute	<b>no/mm3 * 1e-4</b>	number per cubic millimeter X 1 X 10 <sup>-4</sup>
<b>no/2.8 mm2</b>	number per 2.8 square millimeters	<b>no/mm3 * 1e-8</b>	number per cubic millimeter X 1 X 10 <sup>-8</sup>
<b>no/5 mi</b>	number per 5 minutes		
<b>no/10 mi</b>	number per 10 minutes	<b>no/neuron * 1e-3</b>	number per neuron X 1 X 10 <sup>-3</sup>
<b>no/12 h</b>	number per 12 hours		
<b>no/15 mi</b>	number per 15 minutes	<b>no/mo</b>	number per month
<b>no/30 mi</b>	number per 30 minutes	<b>no/nuclei</b>	number per nuclei
<b>no/100 blsm clt</b>	number per 100 blossom cluster	<b>no/org</b>	number per organism
		<b>no/panicle</b>	number per panicle
<b>no/100u2</b>	number per 100 square microns	<b>no/plot</b>	number per plot
<b>no/200 cells</b>	number per 200 cells	<b>no/preg FM</b>	number per pregnant female
<b>no/1000 sperm</b>	number per 1000 sperm	<b>no/sec</b>	number per second

<b>no/section</b>	number per section	<b>org/50cm2</b>	organisms per 50 square centimeters
<b>no/seed</b>	number per seed		
<b>no/sertoli cells</b>	number per sertoli cells	<b>org/60 leaves</b>	organisms per 60 leaves
<b>no/so</b>	number per shoot	<b>org/200 m2</b>	organisms per 200 square meters
<b>no/trap</b>	number per trap	<b>org/200cm3</b>	number of organisms per 200 cubic centimeters of soil
<b>no/100 WBC</b>	number per 100 white blood cells		
<b>no/100um2</b>	number per 100 square micrometers	<b>org/cm ro</b>	organisms per centimeter root
<b>no/1000</b>	number per 1000	<b>org/cntr</b>	organisms per container
<b>no/1000 RBCE</b>	number per 1000 red blood cells	<b>org conc/soil c</b>	organism concentration per soil concentration
<b>no/33 lbs</b>	number per 33 pounds	<b>org/d/cntr</b>	organisms per day per container
<b>no errors</b>	no errors		
<b>no sites</b>	number of sites	<b>org/eu</b>	organisms per experimental unit
<b>NR</b>	not reported	<b>org/ft2</b>	organisms per square foot
<b>nuclei:nucleoi</b>	ratio of nuclei to nucleoi	<b>org/fm</b>	organisms per female
		<b>org/g</b>	organisms per gram
<b>OD</b>	optical density	<b>org/g dry soil</b>	organisms per gram dry soil
<b>OD/100% RBC</b>	optical density of 100% red blood cells	<b>org/g humus</b>	organisms per gram humus
<b>OD/50 mg pro</b>	optical density per 50 milligrams protein	<b>org/g root</b>	organisms per gram root
<b>OD/g pro</b>	units of optical density	<b>org/g soil</b>	organisms per gram soil
change per gram protein		<b>org/ha</b>	organisms per hectare
<b>OD/mg pro</b>	optical density per milligram protein	<b>org/kg soil</b>	organisms per kilogram soil
		<b>org/km2</b>	organisms per square kilometer
<b>OD/mi/mg pro</b>	optical density per minute per milligram protein	<b>org/lit</b>	organisms per litter
		<b>org/m</b>	organisms per meter
<b>OD/WGHT</b>	optical density per unit weight	<b>org/m2</b>	organisms per square meter
		<b>org/mi</b>	organisms per minute
<b>ODx10x3</b>	optical density x10x3	<b>org/plot</b>	organisms per plot
<b>open bol/org</b>	open bolls per organism	<b>org/sample</b>	organisms per soil sample
<b>org</b>	organisms	<b>org/sector</b>	number of organisms per sector
<b>org/10 m</b>	organisms per 10 meters		
<b>org/100g soil</b>	organisms per 100g soil	<b>org/site</b>	organisms per site
<b>org/0.25ft2</b>	organisms per 0.25 square feet	<b>org/trap</b>	organisms per trap
		<b>org/trap/d</b>	organisms per trap per day
<b>org/0.25m2</b>	organisms per 0.25 square meters	<b>org/tree</b>	organisms per tree
<b>org/0.3m</b>	organisms per 0.3 meters		

<b>org/w&gt;150 mmHg</b>	organisms with blood pressure >150 millimeters mercury	<b>% dose/h</b>	percent dose per hour
		<b>% DT</b>	percent of digestive tract
<b>org/w&gt;160 mmHg</b>	organisms with blood pressure >160 millimeters mercury	<b>% earliness</b>	percent earliness (percent of total cotton yield obtained during the first picking)
<b>org/wk</b>	organisms per week	<b>% FATL</b>	percent of total fatty acids
<b>OT</b>	optical transmission	<b>% fertile</b>	percent fertile
<b>OT/1 cm WDT</b>	optical transmission per 1 centimeter bone width	<b>%FM</b>	percent female
<b>OT/1 mm CCT</b>	optical transmission per 1 millimeter combined cortical thickness	<b>% g/g bdwt</b>	percent gram per gram body weight
<b>OT/10 cm BO</b>	optical transmission per 10 centimeters bone	<b>% ingested</b>	percent of ingested
<b>OT/10 kg WGHT</b>	optical transmission per 10 kilograms weight	<b>% intake</b>	percent of intake
<b>OV:BR</b>	ovary to brain ratio	<b>%lit</b>	percent of litter
<b>oz/acre</b>	ounces per acre	<b>% mg</b>	percent milligrams
<b>oz/305 m</b>	ounces per 305 meters	<b>% mg/g bdwt</b>	percent milligrams per gram body weight
		<b>% ML</b>	percent male
		<b>% NaCl</b>	percent sodium chloride
		<b>% of CNTL</b>	percent of control
<b>%</b>	percent	<b>% of diet</b>	percent of diet
<b>%act</b>	percent activity	<b>% of initial</b>	percent of initial quantity
<b>% AI</b>	percent active ingredient	<b>% of max yld</b>	percent of maximum yield
<b>% arb</b>	percent arbuscularity	<b>% org</b>	percent of organisms
<b>% ash</b>	percent ash	<b>% prod</b>	percent production [(# eggs/# hen days)*100]
<b>% of bdwt</b>	percent of body weight	<b>% PRTL</b>	percent of total protein
<b>% cell volume</b>	percent cell volume	<b>% RBC</b>	percent red blood cells
<b>% CEC</b>	% of soil cation exchange capacity	<b>% sat</b>	percent saturation
<b>% change</b>	percent change	<b>% sperm</b>	percent sperm
<b>% clitellate</b>	percent clitellate	<b>% tolerance</b>	percent tolerance
<b>% CNTL RI</b>	percent of control Ratcliff Index	<b>% total oil</b>	percent of total oil content
<b>% corn</b>	percent corn pollen	<b>% g</b>	percent grams
<b>% cortex</b>	percent of cortex	<b>%/g</b>	percent per gram
<b>% dev CNTL</b>	percent deviation from control	<b>%*g</b>	percent multiplied by weight in grams
<b>% d wght</b>	percent dry weight	<b>% / min</b>	percent per minute
<b>% dose ret</b>	percent dose retained	<b>%/ml</b>	percent per milliliter
<b>% dose/g TI</b>	percent of dose per gram of tissue	<b>%/org/d</b>	percent per organism per day
		<b>% of total</b>	percent of total



<b>% PLIPD</b>	percent of total phospholipid	<b>pg/L</b>	picograms per liter
<b>% RI</b>	percent Ratcliff Index	<b>pg/kg bdwt/d</b>	picograms per kilogram body weight per day
<b>% soil</b>	percent soil	<b>pg/kg egg</b>	picograms per kilogram egg
<b>% TIME</b>	percent of time	<b>pg/mg org</b>	picograms per milligram organism
<b>% total dose</b>	percent total dose	<b>pg/mg TE</b>	picograms per milligram Toxic Equivalences
<b>% vol</b>	percent volume	<b>pg/ml</b>	picograms per milliliter
<b>% wet wght</b>	percent wet weight	<b>pg/org</b>	picograms per organism
<b>%/d</b>	percent per day	<b>pg/TI</b>	picograms per tissue
<b>%/g TI</b>	percent per gram tissue	<b>pg TE/g egg</b>	picograms Toxic Equivalent per gram egg
<b>%/wk</b>	percent per week	<b>pH</b>	pH
<b>% WSF</b>	percent water soluble fraction	<b>PIg/L</b>	PI grams per liter
<b>[% inhib]</b>	[percent inhibition]	<b>PLC:BL</b>	placenta to blood ratio
<b>% S/ppm Zn</b>	percent sulfur per parts per million zinc	<b>PL:BL</b>	plasma to blood ratio
<b>%succ br/rm</b>	percent successful broods per female	<b>pM</b>	picoMolar
<b>% wght</b>	percent of weight	<b>pmol</b>	picomoles
<b>% wght/org</b>	percent weight per organism	<b>pmol/egg</b>	picomoles per egg
<b>% w/w</b>	percent weight per weight	<b>pmol/hr/mg</b>	picomoles per hour per milligram
<b>% w/v</b>	percent weight per volume	<b>pmol/g</b>	picomoles per gram
<b>% v/v</b>	percent volume per volume	<b>pmol/g egg</b>	picomoles per gram egg
<b>pair</b>	pair	<b>pmol/g/mi</b>	picomoles per gram per minute
<b>pc</b>	permeability constant	<b>pmol/L</b>	picomoles per liter
<b>PCI</b>	plastochron index	<b>pmol/kg egg</b>	picomoles per kilogram egg
<b>pCi/g</b>	picoCuries per gram	<b>pmol/mg/30 mi</b>	picomoles per milligram protein per 30 minutes
<b>pCi/L</b>	picoCuries per liter	<b>pmol/ml</b>	picomoles per millimeter
<b>pCi/ml</b>	picoCuries per milliliter	<b>pmol/mg</b>	picomoles per milligram
<b>pecks/s</b>	pecks per second	<b>pmol/mg/d</b>	picomoles per milligram per day
<b>pellet/d</b>	pellets per day	<b>pmol/mg pro/mi</b>	picomoles per milligram protein per minute
<b>pellet/org/d</b>	pellets per organism per day	<b>pmol/mg pro/h</b>	picomoles per milligram protein per hour
<b>pellets</b>	pellets	<b>pmol/mg/mi</b>	picomoles per milligram per minute
<b>pg</b>	picograms	<b>pmol/mg/ 10 mi</b>	picomoles per milligram per 10 minutes
<b>pg/cell</b>	picograms per cell		
<b>pg/dm3</b>	picograms per cubic decimeter		
<b>pg/g</b>	picograms per gram		
<b>pg/g egg</b>	picograms per gram of egg		

<b>pmol/mg/h</b>	picomoles per milligram per hour	<b>RA/wk</b>	ratio per week
<b>pmol/mg/nmol R</b>	picomoles per milligram per nanomol rhodopsin	<b>rate/100 org</b>	rate per 100 organisms
<b>pmol/mi/g TI</b>	picomoles per minute per gram tissue	<b>rate/mi</b>	rate per minute
<b>pmol/mi/mg pro</b>	picomoles per minute per milligram protein	<b>rev</b>	revolutions
<b>pmol/nl</b>	picomoles per nanoliter	<b>rev/h</b>	revolutions per 5 hours
<b>pmol/nm p450/mi</b>	picomoles per nanomole cytochrome P450 per minute	<b>RF units</b>	RF units
<b>ppb</b>	parts per billion	<b>rgv</b>	relative gray value
<b>ppb/2H/org</b>	per two hours per organism	<b>RI</b>	Ratcliffe index (shell wt/egg length x width mm <sup>2</sup> )
<b>pphr</b>	parts per hundred rubber	<b>RNA:protein</b>	RNA to protein ratio
<b>ppm</b>	parts per million	<b>ro/so</b>	root to shoot ratio
<b>ppm dw fd</b>	parts per million dry weight food	<b>rpm</b>	revolution per minute
<b>ppm food</b>	parts per million food	<b>RR</b>	Centric fusions
<b>ppm H2O</b>	parts per million water	<b>RSA/TI</b>	relative specific activity per tissue
<b>ppm-hour</b>	parts per million hour	<b>RV:TV</b>	ratio of right ventricle to total ventricle
<b>ppm/d/kg bdwt</b>	parts per million per day per kilogram body weight	<b>s</b>	seconds
<b>ppm/organi</b>	parts per million per organism	<b>SA</b>	Specific activity
<b>ppm soil</b>	parts per million soil	<b>s/12 rpm</b>	seconds per 12 revolutions per minute
<b>ppm/d</b>	parts per million per day	<b>s/16 rpm</b>	seconds per 16 revolutions per minute
<b>ppm/eu</b>	parts per million per experimental unit	<b>s/8 rpm</b>	seconds per 8 revolutions per minute
<b>ppmw</b>	parts per million by weight	<b>sd/org/d</b>	seeds per organism per day
<b>prdt/mi/mg pro</b>	product formed per minute per milligram protein	<b>s/g</b>	seconds per gram
<b>pt</b>	pints	<b>s/h</b>	seconds per hour
<b>pt/ac</b>	pints per acre	<b>sessions</b>	sessions
<b>q/ha</b>	quintals per hectare (1 quintal = 100 kilograms)	<b>SFU</b>	sigma Frankel units
<b>[RA]</b>	[ratio: use the number, no unit needed]	<b>sgth:thik</b>	Strength to thickness ratio
<b>R</b>	weight/(length x width) an index of eggshell quality	<b>sgth:wght</b>	Strength to weight ratio
<b>RA 1e-3</b>	ratio * 1e-3	<b>sigma u/100ml</b>	sigma units per 100 milliliters
		<b>SL unit</b>	SL unit
		<b>SL:ME</b>	Slice to median ratio
		<b>so/ft2</b>	shoots per square foot
		<b>so:gr</b>	ratio shoot to grain
		<b>so:ro</b>	ratio shoot to root

<b>SP:BR</b>	spleen to brain ratio	<b>u/co2/50mg/10mi</b>	units per carbon dioxide per 50 milligrams per 10 minutes
<b>spots/le</b>	spots per leaf		
<b>species</b>	species	<b>u/d</b>	units per day
<b>spines/ u area</b>	spines per unit area	<b>u/mg N2</b>	units per mg N2
<b>str:gr</b>	ratio plant straw to grain	<b>u/mg TI</b>	units per milligram tissue
<b>succ br</b>	successful broods	<b>U/ml</b>	Units per milliliter
<b>succ br/fm</b>	successful broods per female	<b>U/ml RBC</b>	units per milliliter red blood cells
		<b>U of fl</b>	units of fluorescence
<b>T3:T4</b>	Ratio of triiodothyronine (T3) to thyroxine (T4)	<b>u/g</b>	units per gram
<b>Tbsp/gal</b>	Tablespoons per gallon	<b>u/l</b>	units per liter
<b>t/ha</b>	tons per hectare	<b>u/mg</b>	units per milligram
<b>t/ha gr/t/ha gr + str</b>	tons per hectare grain plus straw	<b>U/mg pro</b>	units per milligram protein
		<b>u/ml</b>	units per milliliter
<b>taxa</b>	taxa	<b>u/TI</b>	units per tissue
<b>TE:BR</b>	testes to brain ratio	<b>U/0.2 ml</b>	units per 0.2 milliliters
<b>tillers/m2</b>	tillers per square meter	<b>uBq</b>	microBecquerels
<b>tons/acre</b>	tons per acre	<b>uCi</b>	microcuries
<b>top:root</b>	ratio plant tops to roots	<b>uCi/100g org</b>	microcuries per 100 grams organism
<b>treated:cntl</b>	ratio treated to control		
<b>trials</b>	trials	<b>uCi/3.6mg</b>	microcuries per 3.6 milligrams
<b>TS:BR</b>	thymus to brain ratio	<b>uCi/30mg</b>	microcuries per 30 milligrams
<b>u</b>	units	<b>uCi/L</b>	microcuries per liter
<b>U/100 mg TI</b>	Units per 100 milligram tissue	<b>uCi/g</b>	microcuries per gram
		<b>uCi/g org</b>	microcuries per gram organism
<b>u2</b>	square microns		
<b>u2/300,000 u2</b>	square micrometers per 300,000 micrometers squared	<b>uCi/g soil</b>	microcuries per gram soil
		<b>uCi/kg</b>	microcuries per kilogram
<b>u3</b>	cubic microns	<b>uCi/mg</b>	microcuries per milligram
<b>u act</b>	unit activity (an increase in absorbance at 555 nm of 0.100, with a 1.0 cm light path, per milliliter of erythrocytes per hour, at 38 C).	<b>uCi/ml</b>	microcuries per milliliter
		<b>uCi/nmol</b>	microcuries per nanomoles
		<b>uCi/org</b>	microcuries per organism
		<b>uCi/ug</b>	microcuries per microgram
<b>u act/h</b>	unit activity per hour	<b>uCi/ul</b>	microcuries per microliter
<b>u eq/g pro/mi</b>	microatom equivalents per gram protein per minute	<b>ueq/l</b>	microequivalents per liter
		<b>ueq/g</b>	microequivalents per gram
		<b>ug</b>	micrograms

<b>ug-atoms/L</b>	micrograms atoms per liter	<b>ug TEQ/kg bw/wk</b>	micrograms Toxic Equivalency Concentration per kg bdwt per week
<b>ug%</b>	micrograms percent		
<b>ug chl/cm2</b>	micrograms chlorophyll per square centimeter	<b>ug TTC/mg pro/h</b>	micrograms triphenyl tetrazolium chloride reduced per milligram
<b>ug chl/ mg leaf</b>	micrograms chlorophyll per milligram of leaf	<b>ug/0.1 ml/d/org</b>	micrograms per 0.1 milliliter per day per organism
<b>ug CO2/g d sl/h</b>	micrograms carbon dioxide per grams dry soil per hour	<b>ug/0.5g</b>	micrograms per 0.5 grams
<b>ug enz/g/h</b>	microgram enzyme per gram per hour	<b>ug/10 g bdwt</b>	micrograms per 10 grams body weight
<b>ug frmzn/100g</b>	micrograms formazan formed per 100 grams tissue (formazans: Coloured azo compounds formed by the reduction of tetrazolium salts. Employing this reaction, oxidoreductase activity can be determined quantitatively in tissue sections by allowing the enzymes to act on their specific substrates in the presence of tetrazolium salts.	<b>ug/100g</b>	micrograms per 100 grams
		<b>ug/100 g bdwt</b>	micrograms per 100 grams body weight
		<b>ug/100 g bdwt/d</b>	micrograms per 100 grams body weight per day
		<b>ug/100g/d</b>	micrograms per 100 grams per day
		<b>ug/100g org/d</b>	micrograms per 100 grams organism per day
		<b>ug/100 mg</b>	micrograms per 100 milligrams
<b>ug GHA/1e+6 c/h</b>	micrograms gamma-glutamylhydroximate per 1X10 +6 cells per hour	<b>ug/100 mg TI</b>	micrograms per 100 milligram tissue
<b>ug N/g</b>	micrograms nitrogen per gram.)	<b>ug/100mg/30mi</b>	micrograms per 100 milligrams per 30 minutes
<b>ug NANA/TI</b>	micrograms N-acetyl neuraminic acid per tissue	<b>ug/100mg/h</b>	micrograms per 100 milligrams per hour
<b>ug O/g pro/mi</b>	micrograms oxygen per gram protein per minute	<b>ug/100ml</b>	micrograms per 100 milliliters
<b>ug PAP/g/20 mi</b>	micrograms peroxidase-anti-peroxidase (PAP) per gram per 20 minutes	<b>ug/100ml RBC</b>	micrograms per 100 milliliters red blood cells
<b>ug PAP/g/30 mi</b>	micrograms peroxidase-anti-peroxidase (PAP) per gram per 30 minutes	<b>ug/200mg/20mi</b>	micrograms per 200 milligrams per 20 minutes
		<b>ug/200mg/30mi</b>	micrograms per 200 milligrams per 30 minutes
<b>ug Pi/mg</b>	micrograms Pi/milligram	<b>ug/24h</b>	micrograms per 24 hours
<b>ug Pi/mg MIT</b>	micrograms Pi/milligram mitochondria	<b>ug/2.5 ul/h</b>	micrograms per 2.5 microliters per hour
<b>ug POH/mg pro/m</b>	micrograms phenol per milligrams protein per minute	<b>ug/24h/org</b>	micrograms per 24 hours per organism
<b>ug pro ld/ne</b>	ug proteolipid per nerve pair	<b>ug/ 4d</b>	micrograms per 4 days
<b>ug TE/kg</b>	micrograms Toxic Equivalent per kilogram	<b>ug/50ul</b>	micrograms per 50 microliters
		<b>ug/72h</b>	micrograms per 72 hours

<b>ug/500g</b>	micrograms per 500 grams	<b>ug/g dry fd</b>	micrograms per gram dry food
<b>ug/bee</b>	micrograms per bee	<b>ug/g egg</b>	micrograms per gram egg
<b>ug/cell</b>	micrograms per cell	<b>ug/g food</b>	micrograms per gram food
<b>ug/cm2</b>	micrograms per centimeter squared	<b>ug/g npro</b>	micrograms per gram nonprotein
<b>ug/cm2/d</b>	micrograms per square centimeter per day	<b>ug/g om</b>	micrograms per gram organic matter
<b>ug/cm3</b>	micrograms per cubic centimeter	<b>ug/g org</b>	micrograms per gram organism
<b>ug/d</b>	micrograms per day	<b>ug/g org/d</b>	micrograms per gram organism per day
<b>ug/d/org</b>	micrograms per day per organism	<b>ug/g org/wk</b>	micrograms per gram organism per week
<b>ug/disk</b>	micrograms per disk	<b>ug/g org x 1E2</b>	micrograms per gram organism x 1E2
<b>ug/dl</b>	micrograms per deciliter	<b>ug/g pro</b>	micrograms per gram protein
<b>ug/dm3</b>	micrograms per cubic decimeter	<b>ug/g soil</b>	micrograms per gram soil
<b>ug/egg</b>	micrograms per egg	<b>ug/g tissue</b>	micrograms per gram tissue
<b>ug/em</b>	micrograms per embryo	<b>ug/g wet wt</b>	micrograms per gram wet weight
<b>ug/eu</b>	micrograms per experimental unit	<b>ug/g/d</b>	micrograms per gram per day
<b>ug/eu/d</b>	micrograms per experimental unit per day	<b>ug/g/wk</b>	micrograms per gram per week
<b>ug/fish</b>	micrograms per fish	<b>ug/h</b>	micrograms per hour
<b>ug/g</b>	micrograms per gram	<b>ug/h/100 g</b>	micrograms per hour per 100 grams
<b>ug/g/30 min</b>	micrograms per gram per 30 minutes	<b>ug/h/100 ml</b>	micrograms per hour per 100 milliliters
<b>ug/g ash</b>	micrograms per gram ash	<b>ug/kg</b>	micrograms per kilogram
<b>ug/g bdwt</b>	micrograms per gram body weight	<b>ug/kg bdwt</b>	micrograms per kilogram body weight
<b>ug/g bdwt/d</b>	micrograms per gram body weight per day	<b>ug/kg bdwt/d</b>	micrograms per kilogram body weight per day
<b>ug/g bdwt/wk</b>	micrograms per gram body weight per week	<b>ug/kg bdwt/wk</b>	micrograms per kilogram body weight per week
<b>ug/g CREA</b>	micrograms per gram creatinine	<b>ug/kg/d</b>	micrograms per kilogram per day
<b>ug/g dry cmpst</b>	micrograms per gram dry compost	<b>ug/kg/egg</b>	micrograms per kilogram egg
<b>ug/g dry wt</b>	micrograms per gram dry weight	<b>ug/kg fd</b>	micrograms per kilogram food
<b>ug/g d soil</b>	micrograms per gram dry soil		
<b>ug/d diet</b>	micrograms per gram diet		

<b>ug/kg LD</b>	micrograms per kilogram lipid	<b>ug TE/kg</b>	micrograms Toxic Equivalent per kilogram
<b>ug/kg/mi</b>	micrograms per kilogram per minute	<b>ug/TI</b>	micrograms per tissue
<b>ug/kg/wk</b>	micrograms per kilogram per week	<b>ug/ul</b>	micrograms per microliter
<b>ug/kg org</b>	micrograms per kilogram organism	<b>ulU/ml</b>	microInternational units per milliliter
<b>ug/kg org/d</b>	micrograms per kilogram organism per day	<b>ul</b>	microliter
<b>ug/kg soil</b>	micrograms per kilogram soil	<b>ul3</b>	cubic microliters
<b>ug/kg TI</b>	micrograms per kilograms tissue	<b>ul/100ml</b>	microliter per 100 millimeter
<b>ug/l</b>	micrograms per liter	<b>ul/20ml</b>	microliter per 20 millimeter
<b>ug/l/d</b>	micrograms per liter per day	<b>ul/beat</b>	microliters per beat
<b>ug/m3</b>	micrograms per cubic meter	<b>ul/beat/kg</b>	microliters per beat per kilogram
<b>ug/mg</b>	micrograms per milligram	<b>ul/cm2</b>	microliter per square centimeter
<b>ug/mg food</b>	micrograms per milligram food	<b>ulCO2/50mgTI/10</b>	microliters carbon dioxide per 50 milligrams tissue per 10 minutes
<b>ug/mg MIT</b>	micrograms per milligram mitochondria	<b>ul Eq/ml</b>	microliters equivalents per milliliter
<b>ug/mg pro</b>	micrograms per milligrams protein	<b>ul O2/g/h</b>	microliters O2 per gram per hour
<b>ug/mg pro/hr</b>	micrograms per milligram protein per hour	<b>ul O2/hr/g</b>	microliters oxygen per hour per gram
<b>ug/mg TI</b>	micrograms per milligram tissue	<b>ul O2/mi/g</b>	microliters oxygen per minute per gram
<b>ug/mi</b>	micrograms per minute	<b>ul/egg</b>	microliters per egg
<b>ug/mi/mg pro</b>	micrograms per minute per milligram protein	<b>ul/g</b>	microliters per gram
<b>ug/min/ml</b>	micrograms per minute per milliliter	<b>ul/g bdwt</b>	microliters per gram body weight
<b>ug/ml</b>	micrograms per milliliter	<b>ul/g/d</b>	microliters per gram per day
<b>ug/ml H2O</b>	micrograms per milliliter water	<b>ul/g/h</b>	microliters per gram per hour
<b>ug/org</b>	micrograms per organism	<b>ul/kg</b>	microliters per kilograms
<b>ug/org/d</b>	micrograms per organism per day	<b>ul/L</b>	microliter per liter
<b>ug/org/wk</b>	micrograms per organism per week	<b>ul/ml</b>	microliter per milliliter
<b>ug/sample</b>	micrograms per sample	<b>ul/org</b>	microliter per organism
<b>ug/tank/wk</b>	micrograms per tank per week	<b>uM</b>	microMolar
		<b>um/s</b>	micrometers per second
		<b>um2</b>	micromoles squared
		<b>um3</b>	cubic micromoles

<b>um3</b>	cubic micrometers or cubic microns	<b>uM SAPNA/mi/ml</b>	micromoles of SAPNA (succinyl-1-(ala)3-p-nitroanilide) inhibited per minute per milliliter
<b>um3/cell</b>	cubic micrometers per cell		
<b>uM/cm3</b>	micromoles per squared centimeter	<b>uM TAME/mi/mgP</b>	micromoles TAME (toluenesulfonyl-L-arginine methyl ester) per minute per milligram protein
<b>uM/h/l RBC</b>	micromoles per hour per liter red blood cells		
<b>um/g/30mi</b>	micromoles per gram per 30 minutes	<b>umol</b>	micromoles
<b>uM/h/mg pro</b>	micromolar per hour per milligram protein	<b>umol ASCA/mg pro</b>	micromoles ascorbic acid per milligram protein
<b>uM/kg</b>	micromolar per kilogram	<b>umol C2H4/g/h</b>	micromoles of ethylene produced per gram per hour
<b>uM/kg wght</b>	micromolar per kilogram weight	<b>umol C2H4/org/h</b>	micromoles of ethylene produced per organism per hour
<b>uM/l</b>	microMolar (micromoles per liter)	<b>umol CO2/m2/s</b>	micromoles CO2 per square meter per second
<b>uM/mg pro</b>	micromoles per milligram protein	<b>umol CO2/g/s</b>	micromoles CO2 per gram per second
<b>uM/min/g</b>	micromoles per minute per gram	<b>umol CO2/g ch/s</b>	micromoles carbon dioxide per gram chlorophyll per second
<b>uM/ml</b>	micromolar per milliliter		
<b>um/TI</b>	micromoles per tissue	<b>umol HA/mg pro</b>	micromoles hippuric acid per milligram protein
<b>uM B-naph/h/ml</b>	micromoles beta-naphthalene per hour per milliliter	<b>umol GH/mgpro/m</b>	micromoles reduced glutathione per milligram protein per minute
<b>um B-naph/h/mgP</b>	micromoles beta-naphthalene per hour per milligram protein	<b>umol NADPH/mg P</b>	micromoles NADPH per milligram protein per minute
<b>uM BAPNA/mi/mgP</b>	micromoles of BAPNA (benzoylarginine-p-nitroanilide) inhibited per minute per milligram protein	<b>umol P/g/20 mi</b>	micromol phosphorus per gram per 20 minutes
<b>uM BAPNA/mi/ml</b>	micromoles of BAPNA (benzoylarginine-p-nitroanilide) inhibited per minute per milliliter	<b>umol P/g/h</b>	micromoles phosphorus per gram per hour
<b>uM BTEE/mi/mgP</b>	micromoles BTEE (N-benzyl-L-tyrosine ethyl ester) per minute per milligram protein	<b>umol P/mg pro/h</b>	micromoles phosphorus per milligram protein per hour
<b>uM P/g</b>	micromoles Phosphorus per gram	<b>umol Pbg/h/g</b>	micromoles of porphobilinogen per hour per gram tissue
<b>uM SAPNA/mi/mgP</b>	micromoles of SAPNA (succinyl-1-(ala)3-p-nitroanilide) inhibited per minute per milligram protein	<b>umol Pi/mgpg/30m</b>	micromoles Pi per milligram protein per 30 minutes
		<b>umol Pi/mgpro/h</b>	micromoles Pi per milligram protein per hour
		<b>umol pyv mg p/h</b>	micromoles pyruvate per milligram protein per hour
		<b>umol/100g</b>	micromoles per 100 grams

<b>umol/100g org</b>	micromoles per 100 grams organism	<b>umol/kg bdwt</b>	micromoles per kilogram body weight
<b>umol/100 ml</b>	micromoles per 100 milliliters	<b>umol/kg egg</b>	micromoles per kilogram egg
<b>umol/10g/h</b>	micromoles per 10 grams per hour	<b>umol/kg media</b>	micromoles per kilogram media
<b>umol/10mg/h</b>	micromoles per 10 milligrams per hour	<b>umol/kg org</b>	micromoles per kilogram organism
<b>umol/20mi/g</b>	micromoles per 20 minutes per gram	<b>umol/l</b>	micromoles per liter
<b>umol/dl/h</b>	micromoles per decaliter per hour	<b>umoles/l agar</b>	micromoles per liter agar
<b>umol/dm3</b>	micromoles per cubic decimeter	<b>umol/l RBC/mi</b>	micromoles per liter red blood cells per minute
<b>umol/eu</b>	micromoles per experimental unit	<b>umol/m</b>	micromoles per meter
<b>umol/g</b>	micromoles per gram	<b>umol/mg</b>	micromoles per milligram
<b>umol/g ash</b>	micromoles per gram ash	<b>umol/mg/15 mi</b>	micromoles per milligram per 15 minutes
<b>umol/g org</b>	micromoles per gram organism	<b>umol/mg/20</b>	micromoles per milligram per 20 minutes
<b>umol/g pro/h</b>	micromoles per gram protein per hour	<b>umol/mg pro</b>	micromoles per milligram protein
<b>umol/g soil</b>	micromoles per gram soil	<b>umol/mgpro/20 mi</b>	micromoles per milligram protein per 20 minutes
<b>umol/g TI</b>	micromole per gram tissue	<b>umol/mgpro/30mi</b>	micromoles per mg protein per 30 minutes
<b>umol/g TI/h</b>	micromoles per gram tissue per hour	<b>umol/mg pro/h</b>	micromoles per milligram protein per hour
<b>umol/g wet wt</b>	micromoles per gram wet weight	<b>umol/mg/h</b>	micromoles per milligram per hour
<b>umol/g/h</b>	micromoles per gram per hour	<b>umol/mg/mi</b>	micromoles per milligram per minute
<b>umol/g/mi</b>	micromoles per gram per minute	<b>umol/ml</b>	micromoles per milliliter
<b>umol/g/15 mi</b>	micromoles per gram per 15 minutes	<b>umol/mi</b>	micromoles per minute
<b>umol/h/g pro</b>	micromoles per hour per grams protein	<b>umol/mi/g</b>	micromoles per minute per gram
<b>umol/h/g TI</b>	micromoles per hour per gram tissue	<b>umol/mi/g TI</b>	micromoles per minute per gram of tissue
<b>umol/h/TI</b>	micromoles per hour per tissue	<b>umol/mi/h</b>	micrograms per minute per hour
<b>umol/h/mg pro</b>	micromoles per hour per milligram protein	<b>umol/mi/l</b>	micromoles per minute per liter
<b>umol/h/mg TI</b>	micromols per hour per milligram tissue	<b>umol/mi/mg</b>	micromoles per minute per milligram
<b>umol/kg</b>	micromoles per kilogram	<b>umol/mi/mg pro</b>	micromoles per minute per milligram protein



<b>umol/mi/ml</b>	micromoles per minute per milliliter	<b>[10x6/ml3]</b>	[10x6 cubic milliliters: use /mm3]
<b>umol/ml/h</b>	micromole per milliliter per hour	<b>[10x6/mm3]</b>	[10x6 cubic millimeters:use /mm3]
<b>umol/ml/mi</b>	micrograms per milliliter per minute	<b>[10x6/ul]</b>	[10x6 microliters:use /ul]
<b>umol/TI</b>	micromoles per tissue	<b>[10x9/l]</b>	[10x9 liters:use /l]
<b>umoles/g TI/h</b>	micromoles per gram tissue per hour	<b>1mg/10ml</b>	1 milligram per 10 milliliters
		<b>1e+1 kg</b>	1 x 10+1 kilograms
<b>umolNH3/1e+6c/h</b>	micromoles NH3 per 1X10+6 cells per hour	<b>1e+1 ug/g</b>	1 X 10 +1 micrograms per gram
<b>units/100ml</b>	units per 100 milliliters	<b>1e+2 cal/g</b>	1 X 10 +2 calories per gram
<b>units/l</b>	units per liter	<b>1e+2 mm</b>	1 X 10 +2 millimeters
<b>units/mg pro</b>	units per milligram protein	<b>1e+2 no/mm2</b>	1 x 10 +2 per square millimeter
<b>unit/mg pro/mi</b>	enzyme unit per milligram protein per minute	<b>1e+2 no/mm3</b>	1 X 10 +2 per cubic millimeter
<b>uu/mg</b>	microunits per milligram	<b>1e+2 ug/g</b>	1 X 10 +2 micrograms per gram
<b>uU/ml</b>	microunits per milliliter		
<b>uu/mi/ml</b>	microunits per minute per milliliter	<b>1e+3 cell/mg TI</b>	1 X 10 +3 cells per milligram tissue
<b>uu/ml</b>	microunits per milliliter	<b>1e+3 cells</b>	1 X 10 +3 cells
<b>uV</b>	microvolts	<b>1e+3 cells/mm3</b>	1 X 10 +3 cells per cubic millimeter
<b>V</b>	response value	<b>1e+3 cm/d</b>	1 X 10 +3 centimeters per day
<b>V/N</b>	response value per number of response sites	<b>1e+3 counts</b>	1 X 10 +3 counts
<b>V/quadrant</b>	response value per quadrant	<b>1e+3 cpm</b>	1 X 10 +3 counts per minute
		<b>1e+3dpm/mg DNA</b>	1 x 10+3 disintegrations per minute per milligram DNA
<b>v/v</b>	volume per volume	<b>1e+3dpm/mg RNA</b>	1 x 10+3 disintegrations per minute per milligram RNA
<b>W units</b>	Wroblewski units	<b>1e+3 dpm/TI</b>	1 X 10 +3 disintegrations per minute per tissue
<b>WER</b>	water efficiency ratio		
<b>wght/lit</b>	weight per litter	<b>1e+3 no</b>	1 X 10 +3 number
<b>wk</b>	week	<b>1e+3 no/cm</b>	1 X 10 +3 number per centimeter
<b>Wijs number</b>	Wijs' number	<b>1e+3 no/cm3</b>	1 X 10 +3 number per cubic centimeter
<b>WO:LI</b>	whole organism to liver ratio	<b>1e+3 no/g TI</b>	1 X 10 +3 number per gram tissue
<b>[1/h]</b>	[one per hour: use /h]		
<b>[10x2/mm3]</b>	[10x2 cubic millimeters:use /mm3]	<b>1e+3 no/mg SP</b>	1 X 10 +3 number per milligram spleen
<b>[10x3/mm3]</b>	[10x3 cubic millimeters:use /mm3]	<b>1e+3 org/acre</b>	1 X 10+3 organisms per acre

<b>1e+3 RA</b>	1 X 10 +3 ratio	<b>1e+6 no</b>	1 x 10+6 number
<b>1e+3 sigma u/g</b>	1 X 10+3 sigma units per gram	<b>1e+6 no/ml</b>	1 X 10 +6 number per milliliter
<b>1e+3 um2</b>	1 X 10 +3 square micrometers	<b>1e+6 no/ul</b>	1 x 10+6 number per microliter
<b>1e+3RNA/TCA/DNA</b>	1 X 10 +3 (counts per minute TCA per milligram RNA) per milligram DNA	<b>1e+6 no/cm3</b>	1 X 10 +6 number per cubic centimeter
<b>1e+3/ml</b>	1 X 10+3/milliliter	<b>1e+6 no/g TI</b>	1 x 10+6 number per gram tissue
<b>1e+3/mm3</b>	1 X 10+3/cubic millimeter	<b>1e+6 no/mg TI</b>	1 X 10 +6 number per milligram tissue
<b>1e+3 no</b>	1 x 10+3 number	<b>1e+6 no/mm3</b>	1 X 10 +6 number per cubic millimeter
<b>1e+3 no/ul</b>	1 x 10+3 number per microliter	<b>1e+6 no/org</b>	1 x 10+6 number per organism
<b>1e+3/ul</b>	1 X 10+3/microliter	<b>1e+7/ml sperm</b>	1 X 10+7 cells per milliliter sperm
<b>1e+4 IU/g</b>	1 X 10 +4 International units per gram	<b>1e+8/mm3</b>	1 x 10+8/cubic millimeters
<b>1e+4 IU/TI</b>	1 X 10 +4 International units per tissue	<b>1e+8 no</b>	1 x 10+8 number
<b>1e+4 no/mg TI</b>	1 x 10+4 number per milligram tissue	<b>1e+9 no</b>	1 X 10 +9 number
<b>1e+4 no/ml</b>	1 X 10 +4 number per milliliter	<b>1e+9 no/l</b>	1 X 10 +9 number per liter
<b>1e+4 ug/g</b>	1 x 10+4 micrograms per gram	<b>1e+9 no/ml</b>	1 X 10 +9 number per milliliter
<b>1e+4 ug/TI</b>	1 X 10+4 micrograms per tissue	<b>1e-1 mg/mg/d</b>	1 X 10 -1 milligrams per milligrams per day
<b>1e+4/mm</b>	1 x 10+4/millimeter	<b>1e-2 mm</b>	1 x 10-2 millimeters
<b>1e+4/mm3</b>	1 x 10+4 per cubic millimeter	<b>1e-2 Nm</b>	1 x 10-2 nanometers
<b>1e+12 no/L</b>	1 X 10+12 number/liter	<b>1e-2 no/ul</b>	1 X 10 -2 number per microliter
<b>1e+5 no</b>	1 X 10 +5 number	<b>1e-2 ug/g</b>	1 X 10 -2 micrograms per gram
<b>1e+5 no/g TI</b>	1 X 10 +5 number per gram tissue	<b>1e-2 J/beat/kg</b>	1 x 10 -2 Joules per beat per kilogram
<b>1e+6 cells</b>	1 X 10 +6 cells	<b>1e-3 cm/d</b>	1 X 10 -3 centimeters per day
<b>1e+6 cells/mm3</b>	1 X 10 +6 cells per cubic millimeter	<b>1e-3 cpm</b>	1 x10-3 counts per minute
<b>1e+6 cm</b>	1 X 10 + 6 centimeters	<b>1e-3*dyn*s*cm-5</b>	1 X 10 -3 X dynes X seconds X centimeters -5
<b>1e+6 cpm</b>	1 X 10 +6 counts per minute	<b>1e-3 mg/mg/d</b>	1 X 10 -3 milligrams per milligrams per day
<b>1e+6 cpm/g TI</b>	1 X 10 +6 counts per minute per gram tissue	<b>1e-3 RA</b>	1 X 10 -3 molar
<b>1e+6/ml</b>	1 X 10+6/milliliter	<b>1e-4dpm/g</b>	1 x 10-4 disintegrations per minute per gram
<b>1e+6/mm3</b>	1 X 10+6/cubic millimeter		
<b>1e+6/ul</b>	1 X 10+6/microliter		

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<b>1e-4dpm/mg Pi</b>	1 x 10 <sup>-4</sup> disintegrations per minute per milligram Pi
<b>1e-4 in</b>	1 X 10 <sup>-4</sup> inches
<b>1e-4 no</b>	1 X 10 <sup>-4</sup> number
<b>1e-5/mm3</b>	1 X 10 <sup>-5</sup> /cubic millimeter
<b>1e-6 mol/mi/gTI</b>	1 X 10 <sup>-6</sup> moles per minute per gram tissue
<b>1e-9 moles</b>	1 X 10 <sup>-9</sup> moles
<b>1e-2M</b>	1 X 10 <sup>-2</sup> molar
<b>1e-3M</b>	1 X 10 <sup>-3</sup> molar
<b>1e-4M</b>	1 X 10 <sup>-4</sup> molar
<b>1e-5M</b>	1 X 10 <sup>-5</sup> molar
<b>1e-6M</b>	1 X 10 <sup>-6</sup> molar
<b>1e-7M</b>	1 X 10 <sup>-7</sup> molar

## Appendix O. Ionic Fraction Codes

Actinium	Ac
Aluminum	Al
Americium	Am
Ammonia (un-ionized)	NH <sub>3</sub>
Ammonium (total)	NH <sub>4</sub>
Ammonium nitrate	NO <sub>3</sub> N
Ammonium nitrite	NO <sub>2</sub> N
Antimonate	SbO <sub>4</sub>
Antimony	Sb
Argon	Ar
Arsenate	ASO <sub>4</sub>
Arsenic	As
Astatine	At
Azide	N <sub>3</sub>
Barium	Ba
Berkelium	Bk
Beryllium	Be
Bismuth	Bi
Borate	BO <sub>3</sub>
Borate	B <sub>2</sub> O <sub>3</sub>
Boron	B
Bromate	B <sub>4</sub> O <sub>7</sub>
Bromate	BrO <sub>3</sub>
Bromine	Br
Cadmium	Cd
Calcium	Ca
Californium	Cf
Carbon	C
Cerium	Ce
Cesium	Cs
Chlorine	Cl
Chlorine produced oxidant	CPOX
Chlorate	ClO <sub>3</sub>

Chlorite	ClO <sub>2</sub>
Chromium	Cr
Chromate	Cr <sub>2</sub> O <sub>7</sub>
Chromate (+6)	CrVI
Cobalt	Co
Copper	Cu
Curium	Cm
Cyanide	CN
Dysprosium	Dy
Einsteinium	Es
Erbium	Er
Europium	Eu
Fermium	Fm
Fluorine	F
Francium	Fr
Gadolinium	Gd
Gallium	Ga
Germanium	Ge
Gold	Au
Hafnium	Hf
Hydrogen Cyanide	HCN
Hydrogen sulfide ion	HS-
Helium	He
Holmium	Ho
Hydrogen	H
Indium	In
Iodine	I
Iridium	Ir
Iron	Fe
Krypton	Kr
Lanthanum	La
Lawrencium	Lr
Lead	Pb
Lithium	Li

Lutetium	Lu
Magnesium	Mg
Manganate	MnO <sub>4</sub>
Manganese	Mn
Mendelevium	Md
Mercury	Hg
Methylmercury	MeHg
Molybdate	MoO <sub>4</sub>
Molybdenum	Mo
Neodymium	Nd
Neon	Ne
Neptunium	Np
Nickel	Ni
Niobium	Nb
Nitrate	NO <sub>3</sub> -
Nitrite	NO <sub>2</sub>
Nitrogen	N
Nobelium	No
Not reported	NR
Osmium	Os
Oxygen	O
Palladium	Pd
Paraquat	PQT
Pentachlorophenol	PCP
Perchlorate	ClO <sub>4</sub>
Phosphorus	P
Platinum	Pt
Plutonium	Pu
Polonium	Po
Potassium	K
Praseodymium	Pr
Promethium	Pm
Protactinium	Pa
Radium	Ra

Radon	Rn
Rhenium	Re
Rhodium	Rh
Rubidium	Rb
Ruthenium	Ru
Samarium	Sm
Scandium	Sc
Selenate	SeO4
Selenite	SeO3
Selenium	Se
Silicate	SiO2
Silicon	Si
Silver	Ag
Sodium	Na
Sodium Azide	NaN3
Strontium	Sr

Sulfate	SO4
Sulfur	S
Tantalum	Ta
Technetium	Tc
Tellurium	Te
Terbium	Tb
Thallium	Tl
Thiocyanate	SCN
Thiosulfate	S2O3
Thorium	Th
Thulium	Tm
Tin	Sn
Titanium	Ti
Total Residual Bromine	TRBr
Total Residual Chlorine	TRCl

Total Residual Oxidant	TROX
Triethyl lead	Pb3E
Tributyltin	TBT
Tributyltin oxide	TBTO
Triphenyltin	TPT
Tungstate	WO4
Uranium	U
Uranium oxide (Uraninite)	UO2
Vanadium	V
Wolfram	W
Xenon	Xe
Ytterbium	Yb
Yttrium	Y
Zinc	Zn
Zirconium	Z

**Appendix P. Chemical Analysis Methods**

<b>Code</b>	<b>Definition</b>	<b>Description</b>
<b>M</b>	<b>Measured</b>	Clearly states in the paper that the concentrations reported by the author were measured.
<b>U</b>	<b>Unmeasured</b>	Author clearly identifies that the concentrations are based on nominal values, or the author presents concentration information, but does not report information that chemical analysis was conducted.
<b>NR</b>	<b>Not Reported</b>	Author describes methods for analyzing chemical concentrations, but it is not clear that the values presented are based on measured or nominal concentrations.
<b>X</b>	Unmeasured (some measured values reported in article)	Author clearly identifies that some of the concentrations are based on nominal values while other concentrations are based on measured values, with the original nominal values also reported. Record the nominal values in the dose data field.

## Appendix Q. Sample Unit Codes for Section V.5. Results Information

Code	Definition
<b>AB</b>	<b>A</b> bove ground portion (plants)
<b>AD</b>	<b>A</b> dult
<b>BH</b>	<b>B</b> oth male and female organisms exposed or observed
<b>BR</b>	<b>B</b> rood
<b>C1</b>	First Clutch
<b>C2</b>	Second Clutch
<b>CC</b>	<b>C</b> ocoons
<b>CL</b>	<b>C</b> ells
<b>CB</b>	<b>C</b> ombs
<b>CO</b>	<b>C</b> olony
<b>CT</b>	<b>C</b> ontainers
<b>DC</b>	<b>D</b> eceased organism
<b>EG</b>	<b>E</b> gg
<b>EM</b>	<b>E</b> mbryo
<b>EU</b>	<b>E</b> xperimental unit
<b>F0</b>	<b>F</b> 0 generation
<b>F1</b>	<b>F</b> 1 generation
<b>F2</b>	<b>F</b> 2 generation
<b>F3</b>	<b>F</b> 3 generation
<b>F4</b>	F4 generation
<b>FET</b>	Fetus
<b>FB</b>	Mature, full-bloom (fruit trees)
<b>FD</b>	<b>F</b> rond(s)
<b>FF</b>	<b>F</b> ields (as in agriculture)
<b>FG</b>	<b>F</b> emale <b>g</b> ametophyte

Code	Definition
<b>FL</b>	<b>F</b> lower(s)
<b>FM</b>	<b>F</b> emale organisms
<b>FX</b>	multiple generations
<b>G1</b>	females, 1 <sup>st</sup> generation
<b>G2</b>	females, 2 <sup>nd</sup> generation
<b>G3</b>	females, 3 <sup>rd</sup> generation
<b>G4</b>	females, 4th generation
<b>G5</b>	females, 5th generation
<b>G6</b>	females, 6th generation
<b>GR</b>	<b>G</b> rains
<b>GS</b>	<b>G</b> erminated seed
<b>HC</b>	<b>H</b> oney comb
<b>HT</b>	<b>H</b> atchling
<b>JV</b>	<b>J</b> uvenile
<b>KR</b>	<b>K</b> ernal
<b>LE</b>	<b>L</b> eaf
<b>LE1</b>	1 <sup>st</sup> leaf
<b>LE2</b>	2 <sup>nd</sup> leaf
<b>LE3</b>	3 <sup>rd</sup> leaf
<b>LE4</b>	4 <sup>th</sup> leaf
<b>LE5</b>	5 <sup>th</sup> leaf
<b>LE6</b>	6 <sup>th</sup> leaf
<b>LE7</b>	7 <sup>th</sup> leaf
<b>LE8</b>	8 <sup>th</sup> leaf
<b>LT</b>	<b>L</b> itters
<b>LV</b>	<b>L</b> arvae
<b>M1</b>	males, 1 <sup>st</sup> generation
<b>M2</b>	males, 2 <sup>nd</sup> generation

Code	Definition
<b>M3</b>	males, 3 <sup>rd</sup> generation
<b>M4</b>	males, 4th generation
<b>M5</b>	males, 5 <sup>th</sup> generation
<b>M6</b>	males, 6 <sup>th</sup> generation
<b>MD</b>	<b>Mature dormant</b>
<b>MG</b>	<b>Male gametophyte</b>
<b>ML</b>	<b>Male organisms</b>
<b>MT</b>	<b>Mature</b> , no specified stage
<b>MU</b>	<b>Multiple</b>
<b>MX</b>	males, multiple generations
<b>NF</b>	Non-pregnant females
<b>NR</b>	Applicable information about the organisms was <b>Not Reported</b>
<b>NT</b>	<b>Nest</b>
<b>NY</b>	<b>Nymph(s)</b>
<b>OR</b>	<b>Organism</b>
<b>PA</b>	<b>Parr</b>
<b>PB</b>	Mature, <b>post-bloom</b> (fruit trees)
<b>PC</b>	<b>Plant cutting</b> (unspecified)
<b>PF</b>	Pregnant females
<b>PH</b>	Mature, <b>pit-hardening</b> (fruit trees)
<b>PL</b>	<b>Plots</b>
<b>PR</b>	<b>Pair</b>
<b>PU</b>	<b>Pupa(e)</b>
<b>RB</b>	Mature <b>reproductive</b> , 2nd generation
<b>RC</b>	Mature <b>reproductive</b> , 3rd generation
<b>RO</b>	<b>Root</b>
<b>RP</b>	Mature <b>reproductive</b>

Code	Definition
<b>RS</b>	<b>Root segments</b>
<b>SA</b>	<b>Subadult</b>
<b>SC</b>	2nd generation (M2), no spec.stage
<b>SD</b>	<b>Seed</b>
<b>SG</b>	Mature, <b>side-green</b> (fruit trees)
<b>SF</b>	<b>Sac Fry</b> , yolk-sac fry
<b>SHL</b>	Shell
<b>SL</b>	<b>Seedling</b>
<b>SM</b>	Samples
<b>SOT</b>	<b>Shoot tip</b>
<b>SV</b>	<b>Survivor</b>
<b>TC</b>	Tissue <b>culture</b> callus
<b>TU</b>	<b>Tubers</b>
<b>VC</b>	<b>Vegetative clone</b>
<b>VG</b>	Mature <b>vegetative</b>



## Appendix R. Effect Group Codes and Definitions

GROUP/EFFECT CODE(S)	DEFINITION
<b>ACC/ACC</b>	<b>Accumulation:</b> Effects, measurements and endpoints which characterize the process by which chemicals are taken into and stored in plants or animals. Includes lethal body burden.
<b>BEH/AVO, BEH, FDB</b>	<b>Behavior:</b> Overt activity of an organism represented by three <i>effect</i> groups - avoidance, general behavior, and feeding behavior. All measurements related to reproductive behavior are listed under the major effect group REP.
<b>BCM/BCM, ENZ, HRM,</b>	<b>Biochemical:</b> measurement of biotransformation or metabolism of chemical compounds, modes of toxic action, and biochemical responses in plants and animals including three <i>effect</i> groups - biochemical, enzyme and hormone effects.
<b>CEL/CEL, GEN, HIS</b>	<b>Cellular Effects:</b> measurements and endpoints regarding changes in structure and chemical composition of cells and tissues of plants or animals as related to their functions; the three <i>effect</i> groups include cellular, genetic and histological effects.
<b>GRO/DVP, GRO, MPH</b>	<b>Growth:</b> a broad category which encompasses measures of weight and length and includes effects on development, growth and morphology. Development covers toxicant effects on tissue organization in growing progeny. Growth represents length and weight changes at any point in the life cycle. Morphology measurements and endpoints address the structure (bones) and form (organ/tissue development) of an organism at any stage of its life history.
<b>MOR/MOR</b>	<b>Mortality:</b> measurements and endpoints where the cause of death is by direct action of the chemical.
<b>PHY/INJ, IMM, ITX, PHY</b>	<b>Physiology:</b> measurements and endpoints regarding basic activity in cells and tissues of plants or animals. Four <i>effect</i> groups include injury, immunity, intoxication and general physiological response.
<b>POP/POP</b>	<b>Population:</b> measurements and endpoints relating to a group of organisms or plants of the same species occupying the same area at a given time.
<b>REP/ REP, AEG</b>	<b>Reproduction:</b> measurements and endpoints to track the effect of toxicants on the reproductive cycle. All measurements related to reproduction and care of progeny are included in this category, including behavioral and physiological measurements. Measurements related to development of progeny are found under the major <i>effect</i> group GRO, minor <i>effect</i> group DVP. The <i>effect</i> group AEG includes measurements of avian or reptilian eggs.
<b>SYS/PRS</b>	<b>Ecosystem:</b> measurements and endpoints to track the effects of toxicants on ecosystem processes. Includes microbial processes.
<b>NOC/NOC</b>	<b>No Group Code:</b> measurements related to multiple or delayed effects or endpoints reported without a specific effect.

## Appendix S. Group Effect, Effect and Measurement Codes and Definitions

Note: Codes in < > need maintenance and should not be used for coding at this time.

### ACC Accumulation Group

ACC ACCUMULATION EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ASML	Assimilation of test chemical	The conversion of nutrient or chemical into the fluid or solid substance of the body, by the processes of digestion and absorption, whether in plants or animals.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
<BDBN>	Body Burden	No definition available.	Should be coded as RSDE. If this measurement is associated with an endpoint, should be changed to LBCN or EBCN.
ELIM	Elimination	General term for loss or disappearance of a substance from an organism by either passive or active transport mechanism, e.g. diffusion and metabolic transformation.	
GACC	Accumulation, General	Used when more than one measurement is coded for an ACQUIRE record.	
LBCN	Lethal Body Concentration	Also Lethal Body Burden. The body residue of a chemical that is associated with mortality.	
RATO	Ratio	Ratio of accumulated substance between two response sites, but not the whole organism.	
<RCVY>	Recovery of Lead Shot	No definition available.	
RSDE	Residue	Amount of test chemical remaining in tissue after exposure. This includes body burden or body concentrations. This also includes autoradiography results.	
TSLC	Translocation	The conduction of the test substance from one part of an	

ACC ACCUMULATION EFFECT			
		organism to another.	
UPTK	Uptake	The fraction of total available chemical in a medium (food, water) that is transferred to the organism (measured as the incoming - outgoing concentrations) OR a process by which materials are transferred into and onto an organism.	

<b>BEH Behavior Group</b>
---------------------------

AVO AVOIDANCE EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
CHEM	Chemical Avoidance	Avoidance or attraction to a chemical gradient.	
FOOD	Food Avoidance	Avoidance or attraction to a chemical gradient in food.	
GAVO	Avoidance, General	Unknown or multiple types of avoidance responses..	
STIM	Stimulus Avoidance	Avoidance or attraction to a stimulus.	
WATR	Water Avoidance	Avoidance or attraction to a chemical gradient in water.	

BEH BEHAVIOR EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ACTP	Accuracy of Learned Task, Performance	No definition available.	
ACTV	Activity, General	No definition available.	
ADOT	Adopt/adoption	Voluntary acceptance of the offspring of other parents to be as one's own offspring.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AGCL	Aggregation/Clumping	Grouped with the other organisms; aggregating in a group.	
AGGT	Aggression	Hostile, injurious, or destructive behavior or outlook especially when caused by frustration.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
ALRT	Alert	watchful and/OR prompt to meet danger	
APCH	Approach	To make advances to especially in	<a href="http://www.m-w.com/">http://www.m-w.com/</a>

BEH BEHAVIOR EFFECT			
		order to create a desired result, to come very near to.	
ATCL	Antennal Cleaning	No definition available.	
ATSK	Acquired task	Ability to learn a new task.	
ATTK	Attack, attacking	To threaten with immediate injury or capture.	
BATH	Bathing	To wash in a liquid.	
BBBH	Burrow or Burial Behavior	No definition available.	
BITE	Bite or biting	To seize with the teeth.	
BOBB	Bobbing	To move up and down in a short quick movement.	
BOWW	Bow, bowing	To bend the head, body, or knee.	
BWAX	Bees Wax Produced	No definition available.	
CASE	Case Leaving Behavior	Change in number of organisms emerging from a casing.	
CMST	Compactness of Swimming Track	No definition available.	
CNBL	Cannibalism	Eating other individuals of one's own species.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
COMA	Colony Maintenance (Bees)	No definition available.	
COMB	Comb Built	No definition available.	
CRDN	Coordination	Harmonious functioning of muscles or groups of muscles in the execution of movements.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
C RTP	Continual reinforcement task performed	Performance of a task under continual reinforcement.	
DHST	Diameter of Helix of Swimming Track	No definition available.	
DIGG	Dig/digging	To advance by removing or pushing aside material.	Webster's
DPLY	Displaying Behavior	No definition available.	
DRMT	Dormant, Adverse Condition Response	No definition available.	
DTCH	Ability to Detach from Substrate	Change in ability of an organism to detach from or attach to a substrate.	
DUMV	Diurnal movements	Movements made during the day.	
ECMB	Empty Combs	No definition available.	
EQUL	Equilibrium	Change in ability to maintain balance.	

BEH BEHAVIOR EFFECT			
EXTN	Extinction	Time it takes for a behavior to cease	
FLHM	Flehmen response	the collection of pheromone signals through the curling of the upper lip during exploration of the oral and anogenital areas of other animals during social encounters	( <a href="http://www.hhmi.org/news/katz2.html">http://www.hhmi.org/news/katz2.html</a> )
FLIT	Flight	Behaviors include flag, evade, retreat, flee, freeze, defensive upright posture, defensive sideways posture and oblique.	ECOREF 58432
FLTR	Filtration Rate	Change in rate of filtration.	
FLYG	Flying Behavior	No definition available.	
FOOT	Foot Retraction	No definition available.	
F RTP	Fixed ratio task performed	A task performed under fixed ratio reinforcement.	
FRZG	Freezing Behavior	The act of stopping motion brought on by a stimulus.	
FTTR	Flutter	To move with quick wavering or flapping motions.	
GBHV	Behavioral Changes, General	Quantifiable change in activity including trained behavior.	
<GPRD>	Production, General	No definition available.	
GPST	Grip strength	The duration of hanging on thin wire or special apparatus with the fore and hind limbs	( <a href="http://www.oecd.org/dataoecd/38/46/34030071.pdf">http://www.oecd.org/dataoecd/38/46/34030071.pdf</a> )
GRAB	Grab, grabbing	To take or seize by or as if by a sudden motion or grasp.	
GROM	Grooming	An animal's cleaning and caring for the body surface. This includes preening, the cleaning and oiling of feathers with the bill or of hair with the tongue.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HDLF	Head lift	Lifting of the head by an organism.	ECOTOX
HMVT	Horizontal movements	Movements from side to side or on the horizontal plane.	
HONY	Honey Produced	No definition available.	
INST	Sleeping Time, Induced	No definition available.	
JUMP	Jumping	To spring into the air : leap; especially : to spring free from the ground or other base by the muscular action of feet and legs.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
KILL	Kill	One organism killing another	

BEH BEHAVIOR EFFECT			
		organism.	
LOCO	Distance Moved, Change in Direct Movement	Quantifiable change in direct movement .	
MIGR	Migration	Quantifiable change in migration behavior.	
MOTL	Motility	The ability to move spontaneously.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NACT	Non-social activity	Behaviors include explore, scan, dig, push-dig, wash, self-groom, scratch, jump and eat.	ECOREF 58432
NCMV	Nocturnal movements	Movements made during the night.	
NMVM	Movements, Number of	No definition available.	
NRES	No response	No response to the toxicant.	
NGRX	Negative geotaxis reflex	The time to turn 180 degrees when placed head downward on an inclined plane.	<a href="http://www.oecd.org/dataoecd/38/46/34030071.pdf">http://www.oecd.org/dataoecd/38/46/34030071.pdf</a>
NVOC	Vocalizations, Number of	No definition available.	
ORNT	Orientation	To set or arrange in any determinate position especially in relation to the points of the compass.	
PALR	Palmar grasp	Ability to grasp with the palm of a hand.	
PHTR	Phototactic Response	Attraction to or avoidance of light.	
PLAR	Placing reflex	Flexion followed by extension of the leg.	Dorlands Medical Dictionary
POLC	Pollen collected	Collection of a mass of microspores in a seed plant appearing usually as a fine dust.	Webster's
POST	Posture	The position of the limbs or the carriage of the body as a whole.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PNPY	Prey penetration	The penetration of a pest into a plant root system.	
PRVU	Predator Vulnerability	Quantifiable change in ability to avoid or escape capture.	
REST	Rest	A state of motionlessness or inactivity or a bodily state characterized by minimal functional and metabolic activities.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
RRSP	Righting Response	No definition available.	
RSNR	Resting and not ruminating	Lying down and not chewing cud.	

BEH BEHAVIOR EFFECT			
RSPT	Response Time to a Stimulus	No definition available.	
RSRU	Resting and ruminating	Lying down and chewing cud.	
RUBB	Rub	To move along the surface of a body with pressure.	
RVSE	Reversals	To turn completely about in position or direction.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
SACT	Social Activity	Behaviors include attend, nose, groom, sniff, investigate, follow, push-under, push-past, crawl-over and crouch.	ECOREF 58432
SCRT	Scratch	to scrape, dig, rub, tear or mark a surface of with something sharp or jagged such as claws or nails	(Websters)
SDNR	Standing and not ruminating	Standing and not chewing cud.	
SDRU	Standing and ruminating	Standing and chewing cud.	
SEBH	Search/explore behavior	An active movement by which an organism seek resources.	<a href="http://www.colostate.edu/Depts/Entomology/courses/en507/student_papers_1995/bradbury.html">http://www.colostate.edu/Depts/Entomology/courses/en507/student_papers_1995/bradbury.html</a>
SLEP	Sleep/Sleeping	The natural periodic suspension of consciousness during which the powers of the body are restored.	Webster's
SMEL	Smell/Sniff	To perceive the odor or scent of through stimuli affecting the olfactory nerves.	Webster's
SRCH	Stretch	To enlarge or distend especially by force.	Webster's
SRED	Spread, Spreading	To stretch out.	
STLT	Startle	To frighten or surprise suddenly.	Webster's
STPY	Stereotypy	Frequent almost mechanical repetition of the same posture, movement, or form of speech (as in schizophrenia).	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
STRS	Observed Stress	Observed physiological tension or irritation in animals or plants.	
SURF	Surfacing	No definition available.	
SWIM	Swimming	No definition available.	
THML	Temperature Tolerance	Change in tolerance to temperature change.	
TUBE	Tube Building	The process of constructing open-ended, cylindrical tubes using	

BEH BEHAVIOR EFFECT			
		mucus or silk to bind together detritus (ECOTOX STAFF)	
VACL	Valve Closure	Change in the ability to open or close a shell valve upon mechanical stimulation and/or gaping response.	
VCLF	Visual Cliff	No definition available.	
VIBR	Vibrissae placing	A sensorimotor reflex. The vibrissae (hair), but not the skin, is manipulated and invokes a reflex response.	
VISP	Visual placing	The reaction of an organism in response to a visual stimuli. For example: The fast movement of a finger towards a mouse normally elicits an immediate reaction from the mouse. In addition, the mouse is held a few centimeters above a grid (a wire mouse cage top) and should extend its front limbs in an attempt to grasp the grid. This response is known as visual placing.	<a href="http://cmhd.mshri.on.ca/pdf">http://cmhd.mshri.on.ca/pdf</a>
VMVT	Vertical or rearing movements	To rise up on the hind legs.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
WTCH	Watch, watching	To keep something under close observation.	
YAWN	Yawn	To open the mouth wide usually as an involuntary reaction to fatigue or boredom.	Webster's
FDB FEEDING BEHAVIOR EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
BGNG	Begging Behavior	No definition available.	
FCNS	Food Consumption (Amount or Rate)	No definition available.	
FDNG	Feeding Behavior (Activity)	No definition available.	
FECL	Fecal Production	No definition available.	
FEFF	Feeding Efficiency	No definition available.	
FSTR	Food Storage	No definition available.	
FTIM	Feeding Time	No definition available.	
GFDB	Feeding Behavior, General	No definition available.	
LTBD	Litter Breakdown	No definition available.	
PRBE	Predatory Behavior	Change in ability to seek and	



		capture prey.	
STRK	Strikes	Number of times food source was hit.	
WCON	Water Consumption	No definition available.	

<b>BCM BIOCHEMICAL GROUP</b>
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BCM BIOCHEMICAL EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
1HPY	1-Hydroxypyrene	Main metabolite compound of polycyclic aromatic hydrocarbons with four to six rings.	ECOREF#50442
25HC	25-Hydroxycholecalciferol	A 3,25-diol; the first step in the biological conversion of vitamin D3 to the more active form, calcitriol; it is more potent than vitamin D3. Synonym: calcidiol, calcifediol.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
3MDO	3-Methoxytyramine to Dopamine ratio	The ratio of 3-Methoxytyramine to Dopamine (ECOTOX)	
3MTA	3-Methoxytyramine	A metabolite of dopamine	
4ORA	4-Oxo-retinoic acid	An oxidative metabolite of retinoic acid. A highly active endogenous active retinoid.	<a href="http://www.niwi.knaw.nl/elecpubl/imwo/niob/niobb.htm">http://www.niwi.knaw.nl/elecpubl/imwo/niob/niobb.htm</a>
5HAA	5-Hydroxyindole Acetic Acid	A product of serotonin metabolism excreted by patients with carcinoid tumors. (5-HIAA)	
5HSR	5-Hydroxyindole Acetic Acid to Serotonin ratio	The ratio of 5-Hydroxyindole Acetic Acid to Serotonin (ECOTOX)	
8ODG	8-hydroxydeoxyguanosine	A biomarker of oxidative stress on DNA (ECOREF#76203)	
AABA	Alpha-aminobutyric Acid	Inhibitory amino acid - alpha form of GABA.	
AAIB	A-Aminoisobutyrate	A group of compounds that are derivatives of the amino acid 2-amino-2-methylpropanoic acid.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AB12	Aflatoxin B1 and B2	Aflatoxin B1 and Aflatoxin B2 which are potent hepatotoxic and hepatocarcinogenic mycotoxins produced by the aspergillus flavus group of fungi. It is also mutagenic, teratogenic, and causes immunosuppression in animals.	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>

BCM BIOCHEMICAL EFFECT			
AFB1	Aflatoxin B1	A potent hepatotoxic and hepatocarcinogenic mycotoxin produced by the aspergillus flavus group of fungi. It is also mutagenic, teratogenic, and causes immunosuppression in animals. It is found as a contaminant in peanuts, cotton seed meal, corn, and other grains. The mycotoxin requires epoxidation to aflatoxin b1 2,3-oxide for activation. Microsomal monooxygenases biotransform the toxin to the less toxic metabolites aflatoxin m1 and q1.	cancerweb.ncl.ac.uk
AFB2	Aflatoxin B2	A potent hepatotoxic and hepatocarcinogenic mycotoxin produced by the aspergillus flavus group of fungi. It is also mutagenic, teratogenic, and causes immunosuppression in animals.	cancerweb.ncl.ac.uk
ABPT	Androgen binding protein	A protein secreted by testicular Sertoli cells along with inhibin and mullerian inhibiting substance. Androgen binding protein probably maintains a high concentration of androgen in the seminiferous tubules.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ACAR	alpha-Carotene	One of several orange or red crystalline hydrocarbon pigments C <sub>40</sub> H <sub>56</sub> that occur in the chromoplasts of plants and in the fatty tissues of plant-eating animals and are convertible to vitamin A.	
ACHL	Acetylcholine	A reversible acetic acid ester of choline, and a cholinergic agonist serving as a neurotransmitter (ACh).	
ACHP	Acid-soluble hydroxyproline	Specific proline residues on the amino side of a glycine residue in collagen become hydroxylated at C4, before the polypeptides become helical, by the activity of prolyl hydroxylase. This enzyme has a ferrous ion at the active site and a reducing age.	
ACID	Acid Produced	No definition available.	
ACRR	Acetylene Reduction Rate/plant Roots Nodulated	No definition available.	

BCM BIOCHEMICAL EFFECT			
ACTN	Actin	A muscle protein that is the chief constituent of the Z-band myofilaments of each sarcomere.	
ACTR	delta Aminolevulinic acid creatine ratio	The ratio of delta Aminolevulinic acid to creatine in a sample	
ADOX	Adenosine diphosphate to oxygen ratio	The ratio of adenosine diphosphate to oxygen.	
ADPT	Adenosine diphosphate (ADP)	A nucleotide, the 5'-pyrophosphate of adenosine, involved in energy metabolism. It is produced by hydrolysis of ATP and converted back to ATP by the process of oxidative phosphorylation and substrate phosphorylation.	
AGLB	alpha-Globulins	A simple globular protein which cannot be dissolved in pure water but which can be dissolved if a salt is added to the water. It can also be precipitated out of solution and into a solid with a solution of ammonium sulphate at 50% saturation.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AGPT	alpha-glycerophosphate	A salt or ester of either of the glycerophosphoric acids.	
AIHP	Acid-insoluble hydroxyproline	Specific proline residues on the amino side of a glycine residue in collagen become hydroxylated at C4, before the polypeptides become helical, by the activity of prolyl hydroxylase. This enzyme has a ferrous ion at the active site and a reducing agent.	
AION	Anions	Negatively charged atoms or radicals.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AKLD	Alkoxy lipids		
ALAN	Alanine	A neutral amino acid occurring in two forms alpha and beta.	
ALBE	Albumen Energy	Albumin - any protein that is soluble in water and moderately concentrated salt soln, and is coagulable by heat.	
ALBM	Albumin	Any of numerous simple heat-coagulable water-soluble proteins that occur in blood plasma or serum, muscle, the whites of eggs, milk, and other animal substances and in many plant tissues and fluids.	Webster's
ALCO	Aluminum Content	The concentration of aluminum found in a sample.	

BCM BIOCHEMICAL EFFECT			
ALGL	Albumin:Globulin ratio	The ratio of Albumin to Globulin in a sample.	
ALLA	Allantoin	A crystallizable oxidation product of uric acid found in allantoinic and amniotic fluids and in fetal urine.	
ALLT	Allantoic Acid	A crystallizable acid obtained by hydrolysis of allantoin; intermediate product in nucleic acid metabolism.	
AMAC	Amino Acid(s), General Term	Any organic comp containing an amino and a carboxyl group.	
AMAN	Amino Acid Nitrogen	The nitrogen associated with the amino acids in the body.	
AMMO	Ammonia	A colorless alkaline gas.	
AMNH	P-amino Hippurate	A salt of aminohippuric acid, the glycine conjugate of amniobenzoic acid, salt is used to measure the effective renal plasma flow and to determine the functional capacity of the tubular excretory mechanism (PAH or PAHA).	
AMNN	Amino Nitrogen	Nitrogen combined with hydrogen in the amino group. Also known as ammonia nitrogen.	
AMPP	Amyloid precursor protein	An integral membrane protein expressed in many tissues and concentrated in the synapses of neurons.	<a href="http://en.wikipedia.org/wiki/Amyloid_precursor_protein">http://en.wikipedia.org/wiki/Amyloid_precursor_protein</a>
AMPT	Adenosine monophosphate (AMP)	A nucleotide, the 5'-phosphate of adenosine, involved in energy metabolism. It is produced by hydrolysis of ATP and converted back to ADP by adenylate kinase. Also called adenylic acid.	
AMYD	Amyloid	A glycoprotein deposited extracellularly in tissues in amyloidosis.	( <a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a> )
ANTH	Anthocyanins	Any of the intensely colored, water-soluble glycoside plant pigments responsible for most scarlet, purple, mauve, and blue coloring in higher plants.	
ANTC	Anthocyanin	A blue, purple or red, accessory pigment found in plants. Anthocyanins are water-soluble glucosides that are not directly involved in photosynthesis and can mask the green of chlorophyll giving the plant a red purple color.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

BCM BIOCHEMICAL EFFECT			
<AOCN>	Arterial Oxygen Content	No definition available.	Use OCON as measurement and response site ART
APCY	Allophycocyanin	Allophycocyanin (APC) is a large protein (approximate molecular weight 80 kd) containing many fluors.	<a href="http://www.drmmr.com/abcon/APC.html">http://www.drmmr.com/abcon/APC.html</a>
APHT	Alkaline phosphate	No definition available.	
APRO	alpha-Proteins	Protein: Any of a group of complex organic compounds which contain carbon, hydrogen, oxygen, nitrogen and usually sulfur, the characteristic element being nitrogen and which are widely distributed in plants and animals.	
ARCH	arachidonate	An essential unsaturated fatty acid that humans use to synthesize regulatory molecules such as prostaglandins and thromboxanes. It is found in fatty animal tissue such as egg yolk and liver.	
ARGI	Arginine	An amino acid, produced by hydrolysis of proteins.	
ASBT	Ascorbate	A salt or ester of ascorbic acid.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ASCA	Ascorbic Acid	Vitamin C. A white, crystalline, water-soluble vitamin found in many plant materials, especially citrus fruit.	
ASCN	Arsenic to creatinine ratio	The ratio of arsenic to creatinine.	
ASCO	Arsenic content	The concentration of arsenic found in a sample.	
ASHC	Ash Content	The mass of incombustible material remaining after burning a given coal sample as a percentage of the original mass of coal.	
ASPA	Aspartate	A salt of aspartic acid - a nonessential amino acid occurring in proteins.	
ASPR	Asparagine	A nonessential amino acid that is the beta-amide of aspartic acid. It is found in most plants, and has diuretic properties. It is used as a culture medium for certain bacteria.	Dorlands Medical Dictionary

BCM BIOCHEMICAL EFFECT			
ASYC	Alpha-synuclein	a protein found in the brain. It is predominantly a presynaptic neuronal protein	<a href="http://en.wikipedia.org/wiki/Alpha_synuclein">http://en.wikipedia.org/wiki/Alpha_synuclein</a>
ATCO	alpha-Tocopherol concentration	One of eight compounds that occur in nature that have vitamin E activity, an essential vitamin that functions as an antioxidant.	
ATPT	Adenosine Triphosphate	(ATP) A coenzyme composed of adenosinediphosphate with an additional phosphate group; an important energy compound in metabolism.	
ATRA	all-trans-retinoic acid	A form of vitamin A and a drug used for the treatment of acute promyelocytic leukemia.	<a href="http://en.wikipedia.org/wiki/All-trans_retinoic_acid">http://en.wikipedia.org/wiki/All-trans_retinoic_acid</a>
SBCO	Antimony concentration	The concentration of Antimony found in a sample.	ECOTOX
7BRF	7-Benzoyloxyoxyresorufin	No definition available.	
B2MG	beta2-Microglobulin	A small, nonpolymorphic protein, homologous to the C3 domain of IgG, that is one subunit of class I major histocompatibility antigens.	
BACO	Barium content	The concentration of barium found in a sample.	
BAGA	Bisphenol A glucuronic acid	A major degradation product of bisphenol A subjected to renal excretion.	ECOREF 60614
BCAR	beta-Carotene	One of several orange or red crystalline hydrocarbon pigments C <sub>40</sub> H <sub>56</sub> that occur in the chromoplasts of plants and in the fatty tissues of plant-eating animals and are convertible to vitamin A.	
BECO	Beryllium concentration	The concentration of Beryllium found in a sample.	ECOTOX
BICO	Bismuth concentration	The concentration of Bismuth found in a sample.	ECOTOX
BCON	Boron Content	The concentration of boron found in a sample.	
BFCO	Bromoform concentration	A colorless liquid, slightly soluble in water; used in the separation of minerals.	

BCM BIOCHEMICAL EFFECT			
BGLB	beta-Globulins	A simple globular protein which cannot be dissolved in pure water but which can be dissolved if a salt is added to the water. It can also be precipitated out of solution and into a solid with a solution of ammonium sulphate at 50% saturation.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
BGPR	beta- and gamma-Protein	Protein: Any of a group of complex organic compounds which contain carbon, hydrogen, oxygen, nitrogen and usually sulfur, the characteristic element being nitrogen and which are widely distributed in plants and animals.	
BHNC	Behenic Acid	A constituent of most fats and fish oils; large amounts are found in jamba, mustard seed, rapeseed oils, and cerebrosides.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
BIOT	Biotin Content	Biotin - structure identical to vitamin H and coenzyme R; ubiquitous member of the Vitamin B complex required by or occurring in all forms of life.	
BLAC	Bile Acids	Steroid acids found in bile; e.g., taurocholic and glycocholic acid's, used when biliary secretion is inadequate and for biliary colic. Their physiological roles include fat emulsification. Their synthesis is reduced in disorders of the peroxisomes.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd</a>
BLLB	Bilirubin	A reddish yellow pigment $C_{33}H_{36}N_4O_6$ that occurs especially in bile and blood and causes jaundice if accumulated in excess.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
BPHY	b-phycoerythrin	A protein.	
BRCO	Bromine Concentration	The level of bromine in a sample	ECOTOX Staff
<BUNT>	Blood Urea Nitrogen	Nitrogen attached to urea which is a waste product of protein metabolism. Measured to assess kidney function.	
C4CD	C4 acids	Initial product of photosynthesis.	
C9BT	Total 9b,19-cyclopropylsterols	Sterol - steroids with long aliphatic side chains at position 17 and at least one alcoholic hydroxyl group, usually at position 3 with lipid-like solubility	

BCM BIOCHEMICAL EFFECT			
CACO	Calcium Content	Found in nearly all organized tissues	
CAAL	Calcium to aluminum Ratio	The ratio of the amount of calcium to aluminum in an organism or organism's parts.	
CAMP	Adenosine 3',5'-cyclic Monophosphate	A key regulator which acts to control the rate of a number of cellular processes in bacteria, most animals, and some higher plants.	
CANA	Calcium to sodium ratio	Ratio of calcium to sodium in an organism or organism's tissues.	
CAPH	Calcium/Phosphorus Ratio	Calcium and phosphorus form Calcium phosphate, the dense hard material found in teeth and bones	
CARB	Carbohydrate	An aldehyde or ketone derivative of a polydric alcohols, including starches, sugars, celluloses and burns.	
CARC	Carotenoid Content	Isomeric pigments having colors from violet to yellow.	
CARO	Carotene	Any of several red, crystalline carotenoid hydrocarbon pigments occurring widely in nature, convertible in the animal body to Vitamin A.	
CARR	Carrageenan	Sulphated cell wall polysaccharide found in certain red algae. Contains repeating sulphated disaccharides of galactose and (sometimes) anhydrogalactose.	cancerweb.ncl.ac.uk
CAZN	Calcium to Zinc Ratio	Ratio of calcium to zinc in an organism or organism's tissues.	
CCON	Carbon Content	The concentration of carbon found in a sample.	
CCTR	Coproporphyrin creatine ratio	The ratio of Coproporphyrin to creatine in a sample.	ECOTOX
CDAI	Cadmium Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	
CDCO	Cadmium Content	The concentration of cadmium found in a sample.	
CDST	acid soluble thiol	No definition available.	
CDPR	Cadmium to Phosphorus ratio	The ratio of cadmium to phosphorus.	
CDZN	Cadmium to Zinc Ratio	The ratio of cadmium to zinc.	



BCM BIOCHEMICAL EFFECT			
CERO	Ceruloplasmin	A blue copper containing dehydrogenase protein (135 kD) found in serum (200-500_g/ml) that is apparently involved in copper detoxification and storage and possibly also in mopping up excess oxygen radicals or superoxide anions.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CGMP	Cyclic guanylic acid, cGMP	3',5' cyclic ester of guanylic acid. A second messenger generated by guanylyl cyclase and is a major component of ribonucleic acids.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CHAB	Chlorophyll A:Chlorophyll B	The ratio of Chlorophyll A and Chlorophyll B found in a sample.	ECOTOX staff
CHCT	Chlorophyll:Carotenoids	The ratio of chlorophyll to carotenoids in a sample	ECOTOX staff
CHES	Cholesteryl ester	Esterified cholesterol.	ECOREF 67751
CHLA	Chlorophyll 'A' Concentration	Pigment found in photosynthetic cells; occurs in all organisms exhibiting aerobic photosynthesis.	
CHLB	Chlorophyll 'B' Concentration	Pigment found in photosynthetic cells; occurs in all higher plants.	
CHLC	Chlorophyll C concentration	Any of a group of green magnesium-containing porphyrin derivatives occurring in all photosynthetic organisms. Chlorophylls act as respiratory pigments, converting light energy to reducing potential. Chlorophyll C occurs in diatoms and brown algae.	
CHLN	Choline	Considered to be a vitamin of the B complex, found in many animal and plant tissues.	
CHLO	Chlorophyll, General	Pigment found in photosynthetic cells. Measurable change in chlorophyll content including chlorophyll content, chlorosis.	
CHLR	Chloride	Salt of hydrochloric acid; any binary comp of chlorine.	
CHOL	Cholesterol	A pearly, fatlike steroid alcohol, found in animal fats and oils, bile, blood, brain tissues, milk, egg yolk, myelin sheath, liver, kidneys and adrenal gland - precursor to Steroids and sex hormones.	
CHYM	Chymotrypsinogen	An inactive proteolytic enzyme of pancreatic juice; converted to the active form, chymotrysin, by trypsin.	

BCM BIOCHEMICAL EFFECT			
CITA	Citric acid	An important intermediate in the citric acid cycle which breaks down glucose into water and carbon dioxide when oxygen is present.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CLCO	Chlorine concentration	The concentration of chlorine found in a sample.	
CLLG	Collagen	The protein substance of the white fibers (collagenous fibers) of skin, tendon, bone, cartilage and all other connective tissue, composed of molecules of tropocollagen, it is converted into gelatin by boiling. Collagenous pertaining to collagen, forming or producing collagen.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CLMD	Calmodulin	A calcium binding protein with four EF hand binding sites for calcium.	
CMPH	Camphor Concentration	The concentration of camphor found in a sample.	
CMYS	Chymotrypsin	Serine proteases from pancreas. Preferentially hydrolyze Phe, Tyr or Trp peptide and ester bonds.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CNRA	Carbon to Nitrogen Ratio	No definition available.	
CO2C	Carbon Dioxide Content	The concentration of carbon dioxide found in a sample.	
COAN	Chlorpyrifos-o-analog	A metabolite of the chemical Chlorpyrifos.	
COCO	Cobalt Content	The concentration of cobalt found in a sample.	
CODR	9-cis-4-oxo-13,14-dihydro-retinoic acid	A recently discovered retinoic acid metabolite.	ECOTOX 80509
CP2K	Cytochrome P2K (CYP 2K)	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; P2K = pigment 2K	
CP3K	Cytochrome P3K (CYP 3K)	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; P3K = pigment 3K.	

BCM BIOCHEMICAL EFFECT			
CPRP	Coproporphyrin	Produced by oxidation of the methylene bridges in coproporphrynogen - an intermediate in the formation of heme; coproporphyrin III is excreted in the feces in hereditary coproporphyria.	
CRBR	Cerebroside	Glycolipid found in brain (11% of dry matter). Sphingosine core with fatty amide or hydroxy fatty amide and a single monosaccharide on the alcohol group (either glucose or galactose).	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CRCO	Chromium content	The concentration of chromium found in a sample.	
CREA	Creatinine	Anhydride of creatine; found in muscle and blood and excreted in the urine.	
CRLP	Ceruloplasmin	A blue copper containing dehydrogenase protein (135 kD) found in serum (200-500_g/ml) that is apparently involved in copper detoxification and storage and possibly also in mopping up excess oxygen radicals or superoxide anions.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CRMD	Ceramide	An N-acyl sphingosine, the lipid moiety of glycosphingolipids.	
CRPR	Chromium to Phosphorus Ratio	No definition available.	
CRTN	Creatine	A compound which is made by the body and is used to store energy in the form of phosphate molecules.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CUAI	Copper Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	
CUCD	Copper to Cadmium ratio	The ratio of copper to cadmium.	
CUCR	Copper to Carbon ratio	The ratio of copper to carbon in a sample.	

BCM BIOCHEMICAL EFFECT			
CYCB	Cytochalasin B	A group of fungal metabolites that inhibit the addition of G actin to a nucleation site and therefore perturb labile microfilament arrays. Cytochalasin B inhibits at around 1 microgram/ml but at about 5 _g/ml begins to inhibit glucose transport. Cytochalasin D affects only the microfilament system and is therefore preferable.	<a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a>
CYTN	Cysteine	A crystalline sulfur-containing amino acid $C_3H_7NO_2S$ readily oxidizable to cystine.	
CYSI	Cystine	The amino acid formed by linking two cysteine residues with a disulfide linkage between the two SH groups. The analogous compound present within proteins is termed two half cysteines.	
CUCO	Copper Content	Metal; is essential in nutrition, component of various proteins.	
CUMN	Copper to Manganese Ratio	No definition available.	
CUMO	Copper to molybdenum ratio	Ratio of copper to molybdenum in an organism or organism's tissues.	
CUZN	Copper to Zinc Ratio	No definition available.	
<D44T>	Total 4,4 Dimethylsterols	Sterol - steroids with long aliphatic side chains at position 17 and at least one alcoholic hydroxyl group, usually at position 3 with lipid-like solubility.	
DABT	Dehydroascorbate	A salt or ester of dehydroascorbic acid.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
DALA	delta-Aminolevulinic acid	The delta-aminolevulinic acid (pronounce) synthase (ALA synthase) reaction occurs in the mitochondria. The product of the reaction, ALA, diffuses into the cytoplasm, where the next several steps of heme synthesis occur.	<a href="http://medlib.med.uth.edu/NetBiochem/hi31.htm">http://medlib.med.uth.edu/NetBiochem/hi31.htm</a>
DASC	Dehydroascorbic acid	L-threo-2,3-hexodiulosonic acid gamma-lactone. The reversibly oxidized form of ascorbic acid. It is the lactone of 2,3-diketogulonic acid and has antiscorbutic activity in man on oral ingestion.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

BCM BIOCHEMICAL EFFECT			
DCDA	3,4-Dihydroxyphenylacetic acid to Dopamine ratio	The ratio of 3,4-Dihydroxyphenylacetic acid to Dopamine.	ECOTOX
DDEC	DDE concentration	The concentration of DDE in tissue	
DDRP	Didehydroretinyl palmitate	A vitamin.	
DGCR	Diglyceride	Glycerol substituted on the 1 and 2 hydroxyl groups with long chain fatty acyl residues. DAG is a normal intermediate in the biosynthesis of phosphatidyl phospholipids and is released from them by phospholipase C activity. DAG from phosphatidyl inositol polyphosphates is important in signal transduction. Elevated levels of DAG in membranes activate protein kinase C by stabilizing its catalytically active complex with membrane bound phosphatidyl serine and calcium	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
DGDG	Digalactosyl Diglyceride (Glycolipid)	Glycolipid - lipid containing carbohydrate groups, usually galactose. The simplest are the glycodiacyl-glycerols.	
<DI4T>	Total 4-dimethysterols	No definition available.	
DHAP	Dihydroxyacetone-P	No definition available.	
DHCA	1,25-Dihydrocholecalciferol (also Calcitriol)	The form of vitamin D3 that is biologically active in intestinal transport and calcium resorption by bone.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
DHRT	Dehydroretinol (Vitamin A2)	3-Dehydroretinol; retinol with an additional double bond in the 3-4 position of the cyclohexane ring. It is also called vitamin A2. Also known as Didehydroretinol.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
DISC	Diethylsuccinate Hydrolysis	No definition available.	
DMCA	Domoic Acid	Causes amnesic shellfish poisoning (ASP), is an amino acid phycotoxin (algal toxin) found associated with certain algal blooms	<a href="http://en.wikipedia.org/wiki/Domoic_acid">http://en.wikipedia.org/wiki/Domoic_acid</a>
DOPC	3,4-Dihydroxyphenylacetic acid	A metabolite of dopamine.	
DPHZ	1, 1-Diphenyl-2-picryl hydrazyl	No definition available.	

BCM BIOCHEMICAL EFFECT			
DPPA	2,3-diphosphoglyceric acid	A by- product of glycolysis can bind with hemoglobin.	<a href="http://www.hhp.ufl.edu/classes/ess/Spring/Pet3351jd/pdf3351/3351Chapter10.PDF">http://www.hhp.ufl.edu/classes/ess/Spring/Pet3351jd/pdf3351/3351Chapter10.PDF</a>
DRYM	Dry matter	All soluble and insoluble organic substances and inorganic substances present in a sample except for water.	<a href="http://www.florafood.com/common/documents/alidefpar.pdf">www.florafood.com/common/documents/alidefpar.pdf</a>
DSMN	Desmosine	Component of elastin, formed from four side chains of lysine and constituting a cross linkage.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
DTBL	Direct Bilirubin (Conjugated)	Bilirubin - breakdown product of heme, normally circulates in plasma as a complex with albumin and is taken up by the liver cells and conjugated.	
ECCR	Echinochrome	A quinone, echinochrome, is the red coloring matter in sea urchins and sand dollars.	
ECSP	Eicosapentaenoate	A fatty acid.	
EICN	Ethyl isocyanide	Bound ethyl isocyanide serves as a structural model for the transition state of the NO-induced oxidation reaction.	<a href="http://phillips-lab.biochem.wisc.edu">phillips-lab.biochem.wisc.edu</a>
ELST	Elastin	Glycoprotein (70 kD) randomly coiled and cross linked to form elastic fibers that are found in connective tissue. Like collagen, the amino acid composition is unusual with 30% of residues being glycine and with a high proline content. Cross linking depends upon formation of desmosine from four lysine side groups. The mechanical properties of elastin are poorer in old animals.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ELYT	Electrolytes	A chemical compound which when molten or dissolved in certain solvents, usually water, will conduct an electrical current.	
ENKP	Enkephalins	Natural opiate pentapeptides isolated originally from pig brain. Leu enkephalin (YGGFL) and Met enkephalin (YGGFM) bind particularly strongly to $\mu$ type opiate receptors.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
EPNP	O-Ethyl-O-p-nitrophenylbenzenethionophosphate	The amount of O-Ethyl-O-p-nitrophenylbenzenethionophosphate contained within a response site.	

BCM BIOCHEMICAL EFFECT			
ERUC	Erucic Acid	A monoethenoid acid that is the cis isomer of brassidic acid and makes up 40 to 50% of the total fatty acid in rapeseed, wallflower seed, and mustard seed.	
ESAA	Amino Acids, Essential	Amino acids required for protein synthesis that cannot be synthesized by the organism and therefore must be maintained in the diet.	
ETCO	epsilon-Tocopherol concentration	One of eight compounds that occur in nature that have vitamin E activity, an essential vitamin that functions as an antioxidant.	
ETSR	Erythrocyte sedimentation rate	A test that measures the rate at which red blood cells settle through a column of liquid. A non-specific index of inflammation.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
7ERF	7-Ethoxyresorufin	No definition available.	
ETHL	Ethylene	A colorless, flammable gas with a sweet taste and odor.	
FAME	Fatty Acid Methyl Ester	No definition available.	
FATL	Fatty acid, total	Total amount of fatty acids .Any number of saturated aliphatic monocarboxylic acids. A metabolic byproduct from the breakdown of fats. Chemically R COOH where R is an aliphatic moiety.	
FBNT	Fibronectin	A large glycoprotein found on the surface of cells and mediates cellular adhesion, control of cell shape and cell migration.	
FBRG	Fibrinogen	Soluble plasma protein (340 kD, 46 nm long), composed of 6 peptide chains.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
FEAI	Iron Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	
FEMN	Iron to Manganese Ratio	No definition available.	
FENR	Fenretinide (4-Hydroxy-retinoic acid)	A Vitamin-A derivative. A synthetic retinoid. It is an effective as an antineoplastic agent.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
FEZN	Iron to zinc ratio	No definition available.	

BCM BIOCHEMICAL EFFECT			
FFTA	Fatty Acids, Free or Nonesterified	Straight chained monocarboxylic acid, that are nonesterified; the fraction of plasma fatty acids that are not in the form of glycerol; transported complexed with albumin.	
FIBR	Fiber	Amount of fiber from a diet.	
FLRS	Fluorescence	Property of emitting light while exposed to light, the emitted light having a wavelength only slightly longer than that of the light absorbed	Used for algae or other organisms that naturally fluoresce, may be used to measure chlorophyll or population growth rate. For example, if it is specifically stated that fluorescence is used to measure chlorophyll A, code the measurement as CHLA.
FRCT	Fructose	A 6 carbon sugar (hexose) abundant in plants. Fructose has its reducing group (carbonyl) at C2 and thus is a ketose, in contrast to glucose that has its carbonyl at C1 and thus an aldose. Sucrose, common table sugar, is the non-reducing disaccharide formed by an alpha linkage from C1 of glucose to C2 of fructose (latter in furanose form). Fructose is a component of polysaccharides such as insulin, levan.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
FSPP	Female specific proteins	Proteins that only appear in female hemolymph during oocyte maturation.	<a href="http://biotech.korea.ac.kr/member/kimhr/17.pdf">http://biotech.korea.ac.kr/member/kimhr/17.pdf</a>
FTIX	free thyroxine index	An arbitrary value obtained by multiplying the triiodothyronine uptake by the serum thyroxine concentration; it largely corrects for variations in thyroid-bound globulin concentration by providing a clinically valid estimate of the physiologically active free thyroxine; direct assay or laboratory measurement of free serum thyroxine yields a more accurate value.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>



BCM BIOCHEMICAL EFFECT			
FUB1	Fumonisin B1	Fumonisin B1 is an inhibitor of ceramide synthase. Fumonisin B1 is the most prevalent member of a family of toxins produced by several species of <i>Fusarium</i> moulds which occur mainly in maize.	<a href="http://en.wikipedia.org/wiki/Fumonisin_B1">http://en.wikipedia.org/wiki/Fumonisin_B1</a>
FUB2	Fumonisin B2	Fumonisin B2 is a mycotoxin produced by the fungus <i>Fusarium moniliforme</i> . It is a structural analog of Fumonisin B1. Fumonisin B2 is more cytotoxic than Fumonisin B1. Fumonisin B2 inhibits sphingosine acyl-transferase.	<a href="http://en.wikipedia.org/wiki/Fumonisin_B2">http://en.wikipedia.org/wiki/Fumonisin_B2</a>
FUMO	Fumonisin	a family of toxins produced by several species of <i>Fusarium</i> moulds which occur mainly in maize	<a href="http://en.wikipedia.org/wiki/Fumonisin_B1">en.wikipedia.org/wiki/Fumonisin_B1</a>
GABA	gamma-Aminobutyric acid	Thought to be a central nervous system postsynaptic inhibitory transmitter.	
GBCM	Biochemical, General	Biochemistry - the chemistry of living organisms and the vital processes; physiological chemistry.	
GCBN	Gap charge balance	A measurement used for determining blood gases. Because of electrochemical balance the concentrations of serum cations and anions are the same. However, in the routine measurement of electrolytes, more anions are unmeasured than are cations; this leads to an expected "anion gap." As typically calculated, the anion gap is based on only three electrolytes: sodium, chloride and bicarbonate (or serum CO <sub>2</sub> ).	<a href="http://www.mtsinai.org/pulmonary/noninvasive/gaps.htm">http://www.mtsinai.org/pulmonary/noninvasive/gaps.htm</a>
GD1A	Ganglioside GD1a	Any disease characterized, in part, by the abnormal accumulation within the nervous system of specific gangliosides, e.g., GM2 gangliosidosis, Tay-Sachs disease, caused by hexosaminidase A enzyme deficiency with accumulation of GM2 ganglioside.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

BCM BIOCHEMICAL EFFECT			
GD1B	Ganglioside GD1b	Any disease characterized, in part, by the abnormal accumulation within the nervous system of specific gangliosides, e.g., GM2 gangliosidosis, Tay-Sachs disease, caused by hexosaminidase A enzyme deficiency with accumulation of GM2 ganglioside.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GESM	Geosmin	Geosmin, trans-1,10-dimethyl-trans-9-decalol, is a metabolite produced by several cyanobacteria species at varying amounts.	
GERA	Geranyl Acetate	No definition available.	
GERN	Geraniol	Used in perfumery and flavoring.	
GGGH	Glutathione disulfide to glutathione ratio (oxidized to reduced)	The ratio of glutathione disulfide to glutathione. Also known as Oxidized glutathione to reduced glutathione ratio	ECOTOX
GGLB	gamma-Globulins	A simple globular protein which cannot be dissolved in pure water but which can be dissolved if a salt is added to the water. It can also be precipitated out of solution and into a solid with a solution of ammonium sulphate at 50% saturation.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GGM1	Ganglioside GM1	Form of gangliosidosis characterized by accumulation of g(m1) ganglioside and oligosaccharides, and caused by an absence or severe deficiency of beta-galactosidase a. The three phenotypes of g(m1) gangliosidosis are called infantile (generalized), juvenile, and adult (types 1, 2, and 3 respectively), referring to the age at which clinical manifestations appear.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GGT1	Ganglioside GT1	Any disease characterized, in part, by the abnormal accumulation within the nervous system of specific gangliosides, e.g., GM2 gangliosidosis, Tay-Sachs disease, caused by hexosaminidase A enzyme deficiency with accumulation of GM2 ganglioside.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GINS	Ginsenosides	No definition available.	
GLCN	Glycine	An amino acid.	

BCM BIOCHEMICAL EFFECT			
GLOB	Globulin	A simple globular protein which cannot be dissolved in pure water but which can be dissolved if a salt is added to the water.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GLTH	Glutathione (reduced glutathione)	A widely distributed tripeptide that is important in plant and animal tissue oxidation reactions. The concentration of glutathione in animal cells is 5mM and its sulphhydryl group is kept largely in the reduced state. This allows it to act as a sulphhydryl buffer, reducing any disulphide bonds formed within cytoplasmic proteins to cysteines. Hence, few, if any, cytoplasmic proteins contain disulphide bonds. Also known as Reduced glutathione	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>
GLTL	Galactolipid	A glycolipid that yields galactose on hydrolysis.	<a href="http://www.fasthealth.com/dictionary/g/galactolipid.php">http://www.fasthealth.com/dictionary/g/galactolipid.php</a>
GLTT	Glutamate	A salt or ester of glutamic acid.	
GLUC	Glucose	A sugar.	
GLYC	Glycogen	A polysaccharide stored in the liver and muscles.	
GLYP	Glycoprotein Composition	Glycoprotein - Any of a class of conjugated proteins containing both carbohydrate and protein units.	
GLYT	Total Glycolipid Content	Glycolipid - a lipid containing carbohydrate groups.	
GMIN	Glutamine	Monoamide of glutamic acid, important carrier of urinary ammonia and is broken down in the kidney by the enzyme glutaminase.	
GNGL	Ganglioside	A glycosphingolipid that contains one or more residues of N acetyl or other neuraminic acid derivatives. Gangliosides are found in highest concentration in cells of the nervous system, where they can constitute as much as 5% of the lipid.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GPRO	Glial fibrillary acidic protein	A protein found in microfilaments of glial cells, helps distinguish glial from non-glial tumors.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

BCM BIOCHEMICAL EFFECT			
GSSG	Glutathione disulfide (oxidized glutathione)	A glutathione derivative that forms when the sulfhydryl side chains of the cysteine residues of two glutathione molecules form a disulfide bond during the course of being oxidized with various oxides and peroxides in cells. <b>Also known as oxidized glutathione</b>	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GTAS	Glutamine and asparagine	Glutamine: An amino acid. Monoamide of glutamic acid, important carrier of urinary ammonia and is broken down in the kidney by the enzyme glutaminase. Asparagine: A white crystalline amino acid found in many plant seeds.	McGraw-Hill Scientific Dictionary
GTCO	gamma-Tocopherol concentration	One of eight compounds that occur in nature that have vitamin E activity, an essential vitamin that functions as an antioxidant.	
GTMA	Glutamic acid	An amino acids commonly found in proteins. Plays a central role in amino acid metabolism, acting as precursor of glutamine, proline and arginine.	
GYCL	Glycerol content	A sweet syrupy hygroscopic trihydroxy alcohol C <sub>3</sub> H <sub>8</sub> O <sub>3</sub> usually obtained by the saponification of fats and used especially as a solvent and plasticizer .	
H108	Heat shock protein 108	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
H2O2	Hydrogen Peroxide	Unstable colorless liquid used as a bleach, chemical intermediate, rocket fuel, and antiseptic.	

BCM BIOCHEMICAL EFFECT			
HCO3	Bicarbonate (HCO <sub>3</sub> -) concentration	A carbonate in which but half the hydrogen of the acid is replaced by a positive element or radical, thus making the proportion of the acid to the positive or basic portion twice what it is in the normal carbonates; an acid carbonate; sometimes called supercarbonate. They are an important factor in determining the pH of the blood and the concentration of bicarbonate ions is regulated by the kidney. Levels in the blood are an index of the alkali reserve or buffering capacity.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HDCB	Hydrocarbons	An organic molecule which consists only of carbon and hydrogen atoms, and no other elements.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HDCH	High density lipoprotein cholesterol:Total cholesterol	The ratio between high density lipoprotein cholesterol and total cholesterol concentrations in a sample.	
HDLC	High density lipoprotein cholesterol	Lipoproteins, which are combinations of lipids (fats) and proteins, are the form in which lipids are transported in the blood.	
HEME	Heme Content	Heme - any quadridentate chelate of iron with the four pyrrole groups of a porphyrin; found in blood.	
<HEMT>	Hematological Parameters	No definition available.	
HGCO	Mercury concentration	The concentration of mercury found in a sample.	
HIHT	5-HIAA:5-HT Ratio	The ratio of 5-Hydroxyindole Acetic Acid to 5-Hydroxytryptamine ratio.	
HIST	Histidine	An amino acid.	
HITY	Histidine to tyrosine ratio	Ratio of histidine to tyrosine in an organism or organism's tissues.	
HMCT	Hematocrit (Anemia)	Measurement of the volume of packed red cells in a blood specimen after centrifugation of hematocrit tube.	
HMCY	Hemocyanin	A blue respiratory pigment found only in mollusks and in arthropods other than insects.	
HMDP	Homovanillic acid to Dopamine Ratio	The ratio of Homovanillic acid to Dopamine found in a sample	ECOTOX

BCM BIOCHEMICAL EFFECT			
HMGL	Hemoglobin	Oxygen carrying pigment of the erythrocytes.	
HMGT	Hemagglutinin	An erythrocyte-agglutinating antibody.	
HMLS	Hemolysin	An agent or a substance, such as an antibody or a bacterial toxin, that causes the destruction of red blood cells, thereby liberating hemoglobin. Also called erythrocytolysin, erythrolysin.	The American Heritage Stedman's Medical Dictionary
HMPG	4-Hydroxy-3-methoxyphenylglycol	A metabolite of norepinephrine (abbreviated by MHPG).	
HNMS	N[3H-methyl]scopolamine	No definition available.	
HP20	Heat shock protein 20	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP26	Heat Shock Protein 26 (HSP26)	Any of a group of cellular proteins that are produced under conditions of heat stress and help to stabilize other cellular proteins exposed to high temperatures.	
HP30	Heat shock protein 30	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP32	Heat shock protein 32	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP40	Heat shock protein 40	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP42	Heat shock protein 42	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	

BCM BIOCHEMICAL EFFECT			
HP52	Heat shock protein 52	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP60	Heat Shock Protein 60 (HSP60)	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP70	Heat Shock Protein 70 (HSP70)	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP71	Heat shock protein 71	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP72	Heat shock protein 72	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP73	Heat shock protein 73	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP75	Heat shock protein 75	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HS78	Heat shock protein 78	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP90	Heat shock protein 90	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	

BCM BIOCHEMICAL EFFECT			
HP96	Heat shock protein 96	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HPLN	Hydroxyproline	Specific proline residues on the amino side of a glycine residue in collagen become hydroxylated at C4, before the polypeptides become helical, by the activity of prolyl hydroxylase. This enzyme has a ferrous ion at the active site and a reducing agent such as ascorbate is necessary to maintain the iron in the ferrous state. The presence of hydroxyproline is essential to produce stable triple helical tropocollagen, hence the problems caused by ascorbate deficiency in scurvy. This unusual amino acid is also present in considerable amounts in the major glycoprotein of primary plant cell walls.	(see HRGP). <a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HPXN	Hemopexin	Single chain haem binding plasma _1 glycoprotein (57 kD) unlike haptoglobin does not bind haemoglobin	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HSTM	Histamine	Formed by decarboxylation of histidine. Potent pharmacological agent acting through receptors in smooth muscle and in secretory systems. Stored in mast cells and released by antigen. (See hypersensitivity). Responsible for the early symptoms of anaphylaxis. Also present in some venoms.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HVLA	Homovanillic acid	A metabolite of dopamine. Also known as 3-Methoxy-4-hydroxyphenylacetic acid.	
HXBT	Hexobarbital	A barbiturate that is effective as a hypnotic and sedative.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HXDC	Hexadecenoate	A fatty acid.	
IBIL	Indirect Bilirubin (Free)	Bilirubin - breakdown product of heme, normally circulates in plasma as a complex with albumin and is taken up by the liver cells and conjugated.	
ICON	Iodine concentration	The concentration of Iodine found in a sample.	



BCM BIOCHEMICAL EFFECT			
IDMN	Isodesmosine + Desmonine	Isodesmosine: 2-(4-amino-4-carboxybutyl)-1-(5-amino-5-carboxypentyl)-3,5-bis(3-amino-3-carboxypropyl)pyridinium. A rare amino acid found in elastin, formed by condensation of four molecules of lysine into a pyridinium ring. PLUS Desmosine: Component of elastin, formed from four side chains of lysine and constituting a cross linkage.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ILEU	Isoleucine	An amino acid.	
IMNT	Iso-menthone	No definition available.	
IN1P	Inositol 1-phosphate	Inositol phosphates are a group of mono- to polyphosphorylated inositols. They have important messaging functions in the cells. ( <a href="http://en.wikipedia.org/wiki/Inositol_phosphate">http://en.wikipedia.org/wiki/Inositol_phosphate</a> ) The measurement of Inositol 1-phosphate concentration in a sample.	
ISDM	Isodesmosine	2-(4-amino-4-carboxybutyl)-1-(5-amino-5-carboxypentyl)-3,5-bis(3-amino-3-carboxypropyl)pyridinium. A rare amino acid found in elastin, formed by condensation of four molecules of lysine into a pyridinium ring.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
FECO	Iron Content	Metal that is an essential constituent of hemoglobin, cytochrome and other components of respiratory enzyme systems; chief function is the transport of oxygen to tissues and in cellular oxidation mechanisms.	
KCDR	Potassium Cadmium Ratio	The ratio of potassium to cadmium in a sample.	
KCUR	Potassium Copper Ratio	The ratio of potassium to copper in a sample.	
KNAR	Potassium Sodium Ratio	The ratio of potassium to sodium in a sample.	
LA2S	L-Ascorbyl-2-sulfate	No definition available.	
LACT	Lactate	The anionic form of lactic acid, a salt of lactic acid.	
LALN	Ratio of linoleic to linolenic fatty acids	Ratio of linoleic to linolenic fatty acids	
LAMT	Total lauric acid metabolites	A total of all metabolism products of lauric acid.	ECOREF#67744

BCM BIOCHEMICAL EFFECT			
LASC	L-ascorbic acid	Synonym-ascorbic acid (ASCA). Vitamin C. A water-soluble vitamin found in many fruits and vegetables.	Dorlands Dictionary
LASS	L-ascorbyl-2-sulfate	A stable derivative of ascorbic acid used as a source of vitamin C.	<a href="http://www.asasea.com/technical/AQ48-ok_eefe.pdf">http://www.asasea.com/technical/AQ48-ok_eefe.pdf</a>
LCCT	Leucocrit	(Leukocrit) the volume percentage of leukocytes in whole blood.	
LCTA	Lactic Acid	Metabolic intermediate involved in biochemical processes, end product of glycolysis.	
LCTS	Lactose	The major sugar in human and bovine milk.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LDLP	Low density lipoprotein	Lipoprotein substances (combination of a fat and a protein) which acts as a carrier for cholesterol and fats in the bloodstream.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LDNT	Lipids, Neutral	No definition available.	
LDPL	Lipids, Polar	No definition available.	
LDPO	Lipid Peroxides	Peroxides produced in the presence of a free radical by the oxidation of unsaturated fatty acids in the cell in the presence of molecular oxygen. The formation of lipid peroxides results in the destruction of the original lipid leading to the loss of integrity of the membranes. They therefore cause a variety of toxic effects in vivo and their formation is considered a pathological process in biological systems. Their formation can be inhibited by antioxidants, such as vitamin e, structural separation or low oxygen tension.	
LNLN	Linolenic acid	An 18 carbon fatty acid with three double bonds (9, 12, 15, octadecatrienoic acid) and isomers. Essential dietary component for mammals.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LPPX	Lipoperoxide	A chemical that impairs prostacyclin synthesis and promote thromboxane synthesis, which can increase platelet aggregation.	
PBAI	Lead Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	

BCM BIOCHEMICAL EFFECT			
PBCO	Lead Content	Metal.	
PBIC	Lead 131-Iodine content	The content of Lead 131-iodine found in an organism or tissue.	
PBPR	Lead Phosphorus ratio	The ratio of lead to phosphorus.	
LEUC	Leucine	An amino acid.	
LGHE	Leghemoglobin	Leghemoglobin is a red-colored enzyme active in the environment of N2-fixing nodules; leghemoglobin mediates the high O2 requirements of the N2-fixing bacteroids and the necessity of the O2-limited environment.	
LICO	Lithium content	The concentration of lithium found in a sample.	
LIMO	Limonene	A terpene with a lemon odor that is found in oils from citrus fruits and in oils from peppermint and spearmint.	
LINA	Linalool	A terpene that has a bergamot odor and is found in many essential oils, particularly in bergamot and rosewood; used as a flavoring agent and in perfumes.	
LINO	Linoleic Acid	A principal fatty acid in plants and considered essential in animal nutrition; used in medicine, feeds, paints, and margarine.	
LIPD	Lipid	Fat or fat-like substances, total lipid.	
<LIPT> goes to LIPD	Lipid Content, Total	No definition available.	
LNEI	Linolenic and Eicosenoic Acid	Linolenic acid - One of the principle unsaturated fatty acids in plants and essential fatty acids in plants and an essential fatty acid in animal nutrition. Eicosenoic acid - a saturated fatty acid; a constituent of butter.	
LNLT	Linoleate	A fatty acid. A salt of linoleic acid.	
LPFS	Lipofuscin	Any of a group of liquid pigments found in cardiac and smooth muscle cell, in macrophages, and in parenchyma and interstitial cells; differential reactions include sudanophilia, Nile blue staining, fatty acid , glycol, and ethylene.	
LPSA	Lipid Soluble Antioxidants	Antioxidant - substance that prevents or delays deterioration by action of oxygen.	

BCM BIOCHEMICAL EFFECT			
LYSI	Lysine	An amino acid.	
LUTE	Lutein	An orange xanthophyll C <sub>40</sub> H <sub>56</sub> O <sub>2</sub> occurring in plants, animal fat, egg yolk, and the corpus luteum.	
MCHC	Mean Corpuscular Hemoglobin Concentration	The mean concentration of hemoglobin in the red blood cell (hemoglobin/hematocrit).	
MCHG	Mean Corpuscular Hemoglobin	The mean mass of hemoglobin in the red blood cell (hemoglobin * 10/red blood cell count).	
MCON	Mineral content	Mineral content.	
MCPR	Microsomal Proteins	Proteins found in microsomes.	
MCPV	Mean Corpuscular Volume	Measure average size of a single red blood cell. Used to classify anemias. Derived value obtained by dividing hematocrit / Total RBC	
MCYS	Microcystin	.M. aeruginosa produces compounds called microcystins, which are potent hepatotoxins and probable tumor promoters.	
MDCH	Methyl-4,7,10,13,16,19-Docosahexanate	No definition available.	
METH	Methionine	An amino acid.	
7MRF	7-Methoxyresorufin	No definition available.	
MGAL	Magnesium to aluminum ratio	The ratio of the amount of magnesium to aluminum in an organism or organism's parts.	
MGCO	Magnesium	Metal, that is essential in nutrition, required for the activity of many enzymes, especially those concerned with oxidative phosphorylation	
MGCR	Monoglyceride	Glycerol with an acyl moiety esterified to position 1 (i.e., 1-monoacylglycerol) or position 2 (i.e., 2-monoacylglycerol); an intermediate in the degradation and synthesis of lipids; 2 monoacylglycerols are a major end product of triacylglycerol degradation.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
MGDG	Monogalactosyl Diglyceride (Glycolipid) Content	Glycolipid - lipid containing carbohydrate groups, usually galactose. The simplest are the glycodiacyl-glycerols.	

BCM BIOCHEMICAL EFFECT			
MGLB	Methemoglobin	Hemoglobin in the oxidized state. Also methemoglobin.	
MLAT	Malate	A salt of malic acid.	
MLDH	Malondialdehyde	Malonaldehyde is found in many foodstuffs and can be present at high levels in rancid foods. It is present as a lipid metabolite in human and animal tissues. It is probably used only as a research chemical.	
MNAI	Manganese Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	
MNAC	Menthyl Acetate	No definition available.	
MNCO	Manganese Content	Metal, occur in body tissue in very small amounts and acts as an activator of liver arginase and other enzymes.	
MNFE	Manganese to iron ratio	Ratio of manganese to iron in an organism or organism's tissues.	
MNTH	Menthone	Oily, colorless ketonic liquid with slight peppermint odor.	
MOCO	Molybdenum Content	A silvery metal used in iron-base alloys.	
MRNN	Marennine	A blue pigment secreted by algae.	
MRXC	Mirex concentration	The amount of the chemical Mirex found in an organism, tissue or response site	
MTHL	Menthol	A compound used in medicines and perfumes, and as flavoring agent. Also known as peppermint camphor.	
MTLN	Metallothionein	A group of vertebrate and invertebrate proteins that bind heavy metals that may be involved in zinc homeostasis and resistance to heavy-metal toxicity.	
MYLN	Myelin	The material making up the myelin sheath of nerve axons.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
MYRA	Myristic acid	The myristoyl group is one of the less common fatty acyl residues of phospholipids in biological membranes but is found as an N terminal modification of a large number of membrane associated proteins and some cytoplasmic proteins.	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>

BCM BIOCHEMICAL EFFECT			
NADG	beta-N-Acetyl-D-glucosaminidase	A lysosomal enzyme known to be released from macrophages during inflammation.	
<NADP>	Nicotinamide-adenine Dinucleotide Phosphate, Reduced	(nicotinamide) NADP - a coenzyme compound of ribosylnicotinamide 5'-phosphate, serves as an electron carrier in a number of reactions.	
NAKR	Sodium:Potassium Ratio	The ratio of sodium to potassium in a sample.	
NAZN	Sodium Zinc Ratio	The ratio of sodium to zinc in a sample.	
NO3-	Nitrate	A salt or ester of nitric acid.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
NCON	Nitrogen	Gaseous element that is a constituent of protein and nucleic acids and is present in all living cells.	
NEAA	Amino Acids, Nonessential	The amino acids required for protein synthesis that are synthesized by the organism and are not specifically required in the diet.	
NICO	Nickel Content	The concentration of nickel found in a sample.	
NIFE	Nickel to nitrogen ratio	Ratio of nickel to nitrogen in an organism or organism's tissues.	
NKPH	Enkephalin	Either of two peptides with opiate and analgesic activity that occur naturally in the brain and have a marked affinity for opiate receptors.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
NOCO	Nitric Oxide concentration	This compound is produced from L arginine by the enzyme nitric oxide synthase. Acts as a potent vasorelaxant via elevation of intracellular cGMP in vascular smooth muscle.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NPSH	Nonprotein Sulfhydryl	Sulfhydryl - the univalent radical of sulfur.	
NPSS	Ninhydrin-positive Substances	No definition available.	
NRGC	Energy Compound	No definition available.	

BCM BIOCHEMICAL EFFECT			
NRMA	Neuraminic acid	Sometimes known as sialic acid, but strictly one of a family of sialic acids (which includes also N glycolyl neuraminic acid and O substituted derivatives). It is a 9 carbon sugar formed by adding to mannose three carbons from pyruvate. Occurs in the subset of glycolipids known as gangliosides and in glycoproteins. The presence of its carboxyl group on glycolipids and glycoproteins is responsible for much of the negative charge on animal cell surfaces.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NSRA	Nitrogen to sulfur ratio	No definition available.	
NSUG	Non-reducing sugars	Sugar and therefore does not react with amino acids or proteins.	
NUAC	Nucleic Acids	A large, acidic, chainlike molecule containing phosphoric acid, sugar, and purine and pyrimidine bases; two types are ribonucleic acid and deoxyribonucleic acid.	
NUTR	Nutrient Status Change	No definition available.	
NXNT	Neoxanthine	Carotenoid pigments involved in photosynthesis. Consist of oxygenated carotenes, eg. lutein, violaxanthin and neoxanthine.	
O1LA	(omega-1)-Hydroxy lauric acid	Hydroxylation product of the metabolism of lauric acid.	ECOREF 67744
O2LA	(omega-2)-Hydroxy lauric acid	Hydroxylation product of the metabolism of lauric acid.	ECOREF 67744
O3LA	(omega-3)-Hydroxy lauric acid	Hydroxylation product of the metabolism of lauric acid.	ECOREF 67744
O6LA	(omega-6)-Hydroxy lauric acid	Hydroxylation product of the metabolism of lauric acid.	ECOREF 67744
OACD	Organic acids	Initial product of photosynthesis.	
OHGL	O2 Specific Bond to Hemoglobin	No definition available.	
OLCO	Oil Content	No definition available.	
OLEC	Oleic Acid	Yellowish, unsaturated fatty acid with lard-like aroma; the main component of olive and cooking oils; used in soaps, ointments, cosmetics, and ore beneficiation.	
OLYD	Oil Yield	No definition available.	
ONRA	Oxygen to nitrogen ratio	The ratio of oxygen to nitrogen in a sample.	

BCM BIOCHEMICAL EFFECT			
ORNI	Ornithine	An amino acid.	
OCN	Oxygen Content	The concentration of oxygen found in a sample.	
OSDB	Oestradiol breakdown products	Amount of polar metabolites formed in nmoles/ g microsomal fraction from the breakdown of estradiol.	
OXHC	Oxyhemocyanin	Hemocyanine charged with oxygen.	
PARG	Phosphoarginine	A high-energy phosphate compound that is primarily found in invertebrates.	
PALL	Palmitoleic Acid	An unsaturated fatty acid, found in marine animal oils.	
PALM	Palmitic Acid	A fatty acid derived from spermaceti; used to make metal palmitates and in soaps, water-proofing , and lubricating oils.	
7PRF	7-Pentoxoresorufin	No definition available.	
PBHB	Poly-b-hydroxybutyrate	No definition available.	
PCBC	PCB concentration	The amount of the chemical(s) Polychlorinated biphenol(s) found in an organism, tissue or response site.	
PCLV	Packed Cell Volume	The venous hematocrit determined by centrifugation; the number of packed red cells in ml/100ml of centrifuged blood.	
PCRE	Phosphocreatinine	A high energy reservoir for ATP formation.	<a href="http://web.stcloudstate.edu/lsreerama/Assets/Biochem480/MetabGen.pdf">http://web.stcloudstate.edu/lsreerama/Assets/Biochem480/MetabGen.pdf</a>
PDST	Phosphodiester	A diesterified orthophosphoric acid, RO-(PO <sub>2</sub> H)-OR', as in the nucleic acids.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PEGE	Polyethylene Glycol (Peg) Efflux	No definition available.	
PFER	Phosphorus to Iron Ratio	No definition available.	



BCM BIOCHEMICAL EFFECT			
PGE2	Prostaglandin E2	Any of a group of components derived from unsaturated 20 carbon fatty acids, primarily arachidonic acid, via the cyclooxygenase pathway that are extremely potent mediators of a diverse group of physiologic processes. The abbreviation for prostaglandin is PG, specific compounds are designated by adding one of the letters A through I to indicate the type of substituents found on the hydrocarbon skeleton and a subscript (1, 2 or 3) to indicate the number of double bonds in the hydrocarbon skeleton for example, PGE2. All of the prostaglandins act by binding to specific cell surface receptors causing an increase in the level of the intracellular second messenger cyclic AMP (and in some cases cyclic GMP also). The effect produced by the cyclic AMP increase depends on the specific cell type. Increased cyclic AMP increases prostaglandin synthesis leading to further increases in cyclic AMP. See also individual prostaglandins.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PNYL	Phenols concentration	The concentration of Phenols found in a sample (ECOTOX). Phenols, sometimes called phenolics, are a class of chemical compounds consisting of a hydroxyl group (-OH) attached to an aromatic hydrocarbon group. The simplest of the class is phenol (C <sub>6</sub> H <sub>5</sub> OH).	( <a href="http://en.wikipedia.org/wiki/Phenols">http://en.wikipedia.org/wiki/Phenols</a> )
PHEN	Phenylalanine	An amino acid.	
PCON	Phosphorus Content	Essential element in the diet, found in bones, abundant in all tissues, is involved in some form in almost all metabolic processes.	
PHPH	pH	Hydrogen ion concentration.	
PHSC	Phosphatidyl Choline (Phospholipid) Content	Choline attached to a phospholipid; major component of cell membranes.	
PHSE	Phosphatidyl Ethanolamine (Phospholipid) Content	A phospholipid with an ethanolamine attached; major constituent of cell membranes.	

BCM BIOCHEMICAL EFFECT			
PHSG	Phosphatidyl Glycerol (Phospholipid) Content	No definition available.	
PHSI	Phosphatidyl Inositol (Phospholipid)	A phospholipid with the sugar inositol attached; minor constituent of cell membranes.	
PHSP	Phosphatide Phosphorus	Phospholipid with phosphorus.	
PHST	Phospholipid Content, Total	Phospholipid - major form of lipid in cell membranes.	
3PPG	3-phosphoglycerate	One of the molecules involved in the Calvin cycle which is the fixation of carbon dioxide during photosynthesis.	
PHTC	Phytochelatin	Phytochelatin are small polypeptide compounds produced in plants by enzymes which are expressed in response to heavy-metals (Cd <sup>2+</sup> , Pb <sup>4+</sup> ) .	
PHYC	Phycocyanin	A blue phycobilin. Phycobilin - any of various protein-bound pigments which are open chain tetrapyrroles and occur in some groups of algae.	
PINE	Alpha-pinene	Isomeric unsaturated bicyclic terpene hydrocarbon liquids derived from sulfate wood turpentine; used as solvents for coatings and wax formulations, as chemical intermediates for resins, and as lube-oil additives.	
PLAC	Pulp:Acid	Pulp to acid ratio.	
PLAT	Platelets	Z minute flattened body, especially blood platelets.	
PLSC	Polysaccharide	Polymers of (arbitrarily) more than about ten monosaccharide residues linked glycosidically in branched or unbranched chains.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PMST	Phosphomonoester	No definition available.	
PNAS	p-Nitroanisol	The amount of p-Nitroanisol contained within a response site.	
POLD	Peroxidizable lipids	Lipids that are able to be peroxidized.	
PORP	Porphyrin	Found in prosthetic groups of hemoglobin, myoglobin, and cytochromes.	

BCM BIOCHEMICAL EFFECT			
KCON	Potassium Content	Metallic element of the alkali group, chief cation of muscle and most other cells (intracellular fluid).	
PPHT	Phosphate	Phosphate esters occur in many body constituents including nucleotides and nucleic acids, phospholipids, and phosphoproteins.	
PPYT	Phaeophytin	A breakdown product of chlorophyll	( <a href="http://www.dep.state.fl.us/labs/biology/microbio.htm">www.dep.state.fl.us/labs/biology/microbio.htm</a> )
PRCO	Protein Content	Protein - principle component of protoplasm of cells; a combination of amino acids in peptide linkages.	
PRLN	Proline	A heterocyclic amino acid occurring in essentially all proteins, and as a major constituent in collagen protein.	
PROB	Protein binding	No definition available.	
PRSH	Protein bound sulfhydryl	Protein bound sulfhydryl.	
PRSL	Soluble Protein	Protein - principle component of protoplasm of cells; a combination of amino acids in peptide linkages.	
PRTL	Protein, Total	No definition available.	
PRTO	Protoporphyrin	Combines with heme to form the heme prosthetic group of hemoglobin and myoglobin.	
PRUP	Protein to urea ratio	Ratio of protein to urine.	
PSCY	Plastocyanin	A prototypical blue-copper 'cupredoxin' protein, whose function is electron transfer in photosynthesis.	
PSPH	Phosphagen	A nutrient formed from 3 specific amino acids that saturate muscle tissue with creatine which is a compound of muscle energy production.	
PSPI	Phosphatidylserine and phosphatidylinositol	Derivatives of phosphatidic acids that are parts of biomembranes.	
PSPY	Phosphoenol pyruvate	An important metabolic intermediate. The enol (less stable) form of pyruvic acid is trapped as its phosphate ester, giving the molecule a high phosphate transfer potential. Formed from 2 phosphoglycerate by the action of enolase.	

BCM BIOCHEMICAL EFFECT			
PUTR	Putrescine	An amine associated with putrifying tissue. Associates strongly with DNA. Has been suggested as a growth factor for mammalian cells in culture.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PYRT	Pyrethin	A relatively safe botanical poison derived from a species of chrysanthemum, it breaks down quickly in the environment. It kills by interfering with the pattern of insect nerve transmissions.	
PYRV	Pyruvate	The end product of glycolysis (used synonymously with pyruvic acid).	
PZNR	Phosphorus to Zinc ratio	Ratio of phosphorus to zinc in an organism or organism's tissues.	
RBCO	Rubidium Concentration	The level of Rubidium in a sample	ECOTOX Staff
ROXS	Reactive oxygen species	Reactive intermediate oxygen species including both radicals and non-radicals. These substances are constantly formed in the human body and have been shown to kill bacteria and inactivate proteins, and have been implicated in a number of diseases. Scientific data exist that link the reactive oxygen species produced by inflammatory phagocytes to cancer development.	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>
RBGD	Retinoyl beta-glucuronide	An unstable metabolite of the vitamin A metabolite retinoic acid.	<a href="http://www.pharmacy.ohio-state.edu/homepage/program/medchem/medc_curley.html">http://www.pharmacy.ohio-state.edu/homepage/program/medchem/medc_curley.html</a>
RBVL	Relative Blood Volume (Volume/100g Body Weight)	Sum of red cell volume and plasma volume in relation to body weight.	
RHDP	Rhodopsin	Light sensitive pigment formed from retinal linked through a Schiff's base to opsin: rhodopsin is an integral membrane protein found in the discs of retinal rods and cones, comprising some 40% of the membrane. Vertebrate opsins are proteins of 38 kD.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
RIBO	Riboflavin Content	The heat stable factor of the vitamin B complex; serves as a component of two coenzymes - FAD and FMN	
RIDX	Refractive Index	The refractive power of a medium with that of air which is assumed to be 1.	

BCM BIOCHEMICAL EFFECT			
RRRA	13-cis-Retinoic acid to 9,13-di-cis-Retinoic acid ratio	The ratio of 13-cis-Retinoic acid to 9,13-di-cis-Retinoic acid	ECOTOX
RSUG	Reducing sugars	Reducing sugars refer to any saccharide bearing an anomeric carbon atom which has not formed a glycosidic bond. So called because of the facility with which the aldehyde group reduces mild oxidizing agents.	
RTES	Retinyl esters	Sum of retinyl palmitate, retinyl stearate, and retinyl oleate.	ECOTOX 80509
RTND	Retinoids	A class of keratolytic drugs derived from retinoic acid and used for treatment of severe acne and psoriasis.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
RTRP	Retinol/Retinyl palmitate ratio	The ratio of Retinol to Retinyl palmitate in a sample.	ECOTOX
RTST	Retinyl stearate	A derivative of Vitamin A.	<a href="http://www.umm.edu/altmed/ConsSupplements/VitaminARetinolcs.html">http://www.umm.edu/altmed/ConsSupplements/VitaminARetinolcs.html</a> )
SCCN	Succinate	A salt or ester of succinic acid; for example sodium succinate, the reaction product of succinic acid and sodium hydroxide.	
SCON	Sulfur Content	The concentration of sulfur found in a sample.	
SECO	Selenium content	The concentration of selenium found in a sample.	
SERI	Serine	An amino acid.	
SESR	Selenium to sulfur ratio	No definition available.	
SEWE	Steryl esters and wax esters	A component of the lipid content of organisms.	
SFTD	Sulfatides	Cerebroside sulfuric esters containing one or more sulfate groups in the sugar portion of the molecule.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
SGMP	Sugar monophosphates	Initial product of photosynthesis.	
SGRV	Specific gravity	The ratio of the density of a substance to the density of some substance (as pure water) taken as a standard when both densities are obtained by weighing in air.	

BCM BIOCHEMICAL EFFECT			
SIAL	Sialic acid	A group of naturally occurring n- and o-acyl derivatives of the deoxyamino sugar neuraminic acid. They are ubiquitously distributed in many tissues.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
SICO	Silicon content	The concentration of silicon found in a sample.	
SLAC	Silicic acid	Hydrated silicon dioxide that occurs in nature. It is insoluble in water or acids except hydrofluoric acid.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AGCO	Silver concentration	The concentration of silver found in a sample.	ECOTOX
SLFH	Sulfhydryl	The univalent radical of sulfur, also known as thiol.	
SLFT	Sulfate concentration	The concentration of sulfate measured in a sample.	
SPHG	Sphingomyelin	A group of phospholipids, found in brain, spinal cord, kidney, and egg yolk, containing 1-phosphocholine (choline O-phosphate) combined with a ceramide (a long-chain fatty acid linked to the nitrogen of a long-chain base, such as sphingosine). Synonym: ceramide 1-phosphorylcholine, phosphosphingolipids.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
SPHS	Sugar phosphates	Initial product of photosynthesis.	
SPIG	Spiggin	A glue protein produced by the kidney of a male stickleback that is used as a cementing substance for the building of a nest.	ECOREF 62582
SPMD	Spermidine	A polyamine compound, C <sub>7</sub> H <sub>19</sub> N <sub>3</sub> , found in ribosomes and living tissues and having various metabolic functions. It was originally isolated from semen.	The American Heritage® Dictionary of the English Language: Fourth Edition. 2000.
SQVD	Sulfoquinovosyl diglyceride	A lipid.	
SSER	Sulfur to Selenium Ratio	No definition available.	
<SMET>	Secondary Metabolism	No definition available.	
NACO	Sodium Content	Alkaline metallic element, chief cation of the extracellular body fluids.	
SRCO	Strontium Content	The concentration of strontium found in a sample.	
SSUG	Soluble Sugars	No definition available.	

BCM BIOCHEMICAL EFFECT			
STER	Stearic Acid	Nature's most common fatty acid, derived from natural animal and vegetable fats.	
STES	Sterol esters	Sterol esters are present in plant tissues, but as relatively minor components other than in waxes. Usually the sterol components of sterol esters are similar to the free sterols, although there may be relatively less of stigmasterol.	<a href="http://www.lipid.co.uk/infores/Lipids/sterols/">http://www.lipid.co.uk/infores/Lipids/sterols/</a>
STLD	Saturated lipid or fat	A fatty acid with all potential hydrogen binding sites filled (totally hydrogenated fat).	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
STOL	Sterols	Any of a group of natural steroid alcohols derived from plants or animals; they are waxy insoluble substances. Any steroid-based alcohol having a hydrocarbon (aliphatic) side-chain of 8-10 carbons at the 17-beta position and a hydroxyl group at the 3-beta position (therefore an alcohol).	<a href="http://www.dictionary.com">www.dictionary.com</a> <a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
STRH	Starch Content	Polysaccharide.	
SUCR	Sucrose	A sugar such as sucrose, which is made up of two monosaccharides: one glucose molecule and one fructose molecule. Nonreducing disaccharide, D glucopyranosyl D fructofuranose	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
SUGA	Sugar Content	A sweet carbohydrate.	
SUFA	Ratio of saturated to unsaturated fatty acids	Ratio of saturated to unsaturated fatty acids	
SPTP	Synaptophysin	Synaptophysin is a 38-kd calcium-binding glycoprotein that is present in the presynaptic vesicles of neurons and in the neurosecretory granules of neuroendocrine cells.	<a href="http://www.biocare.net/AntibodyView.asp?ID=421">http://www.biocare.net/AntibodyView.asp?ID=421</a>
TAUR	Taurine	Is one of the most abundant amino acids in the body. It is found in the central nervous system, skeletal muscle and is very concentrated in the brain and heart. It is synthesized from the amino acids methionine and cysteine, in conjunction with vitamin B6.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
TBAR	Thiobarbituric Acid Reactive Substances	No definition available.	

BCM BIOCHEMICAL EFFECT			
TCTP	translationally controlled tumor protein	No definition available.	
TEAM	Tetraethyl Ammonium	The bromide and chloride salts are short acting quaternary ammonium ganglion-blocking agents.	
TERP	T-terpinene	No definition available.	
TFAA	Amino Acids, Total Free	No definition available.	
THBA	Thiobarbituric Acid	A condensation of malonic acids and ureas; parent compound for a class of barbiturates.	
THIA	Thiamin	A member of the water-soluble B vitamin group, necessary for energy production and carbohydrate metabolism. Deficiency is known as beriberi. Vitamin B1.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
THCO	Thorium concentration	The concentration of Thorium found in a sample.	ECOTOX
THRE	Threonine	An amino acid.	
SNCO	Tin concentration	The concentration of Tin found in a sample.	ECOTOX
TICO	Titanium content	The concentration of titanium found in a sample.	
TLCO	Thallium content	The concentration of thallium found in a sample.	
TLBL	Bilirubin, Total	Bilirubin - breakdown product of heme, normally circulates in plasma as a complex with albumin and is taken up by the liver cells and conjugated.	
TMAO	Trimethylamine oxide	Trimethylamine oxide (TMAO) is a common and compatible osmolyte in tissue that is often credited with counteracting protein-destabilizing forces.	<a href="http://www.cephbase.dal.ca/refdb/pdf/6856.pdf">www.cephbase.dal.ca/refdb/pdf/6856.pdf</a>



BCM BIOCHEMICAL EFFECT			
TMFA	Tumour necrosis factor-alpha	Originally described as a tumour inhibiting factor in the blood of animals exposed to bacterial lipopolysaccharide or Bacille Calmette-Guerin. Preferentially kills tumour cells in vivo and in vitro, causes necrosis of certain transplanted tumours in mice and inhibits experimental metastases. Human Tumour Necrosis factor alpha (TNF-a) is a protein of 157 amino acids and has a wide range of pro inflammatory actions. Usually considered a cytokine. Also known as cachectin.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
TNSC	Total Non-structural Carbohydrate	No definition available.	
TPPH	Thiamin pyrophosphate	The diphosphoric ester of thiamin, a coenzyme of several (de)carboxylases, transketolases, and alpha-oxoacid dehydrogenases. Synonym: aneurine pyrophosphate, cocarboxylase, diphosphothiamin.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
TPSY	Trypsin	A proteolytic enzyme which catalyzes the hydrolysis of peptide linkages in proteins.	
TRIB	Tributylin	A colorless fat, found in cows milk.	
TRIG	Triglycerides (Triacylglycerols)	A neutral fat synthesized from carbohydrates for storage in animal adipose cells; on enzyme hydrolysis it releases free fatty acids in the blood.	
TRTY	Tryptophan to tyrosine ratio	The ratio of tryptophan to tyrosine in an organism or organism's tissues.	
TRYP	Tryptophan	Amino acid.	
TRYS	Trypsinogen	The zymogen of trypsin, secreted in the pancreatic juice. Also known as protrypsin.	
TSFN	Transferrin	A protein that carries iron in the bloodstream (80 kD) found in mammalian serum, a beta globulin.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
TTAA	Amino Acids, Total	Measure of total amino acids - any organic comp containing an amino and a carboxyl group.	

BCM BIOCHEMICAL EFFECT			
TTRN	Transthyretin	An a-globulin secreted by the liver; it forms a complex with retinol binding protein and binds retinol, transporting it to the peripheral tissues. It may also bind triiodothyronine or thyroxine although these are usually transported by thyroxine-binding globulins.	Dorland's Medical Dictionary
TYMD	Thymidine	A nucleoside derived from DNA; essential growth factor for certain microorganisms in mediums lacking vitamin B12 and folic acid.	
TYRO	Tyrosine	An amino acid.	
UCON	Uranium concentration	The concentration of Uranium found in a sample.	ECOTOX
UCTR	Uroporphrin creatine ratio	The ratio of Uroporphrin to creatine in a sample.	ECOTOX
UDPA	Uridine Diphosphate (UDP) Acetylglucosamine	No definition available.	
UDGT	UDP-glucuronosyltransferase by using T4 as a substrate	No definition available.	
UPRP	Uroporphyrin	Porphyrins are pigments found in both animal and plant life. This test is useful in evaluating any number of porphyrin disorders (involving the various porphyrins) of red blood cells.	
UREA	Urea	Formed in the liver via the urea cycle from ammonia produced by the deamination of amino acids.	
UREN	Urea nitrogen	The nitrogen associated with the urea in the body.	
URIC	Uric Acid	The end product of purine catabolism in primates.	
VACC	Vaccenic acid	n-Trans-11-octadecenoic acid; an unsaturated fatty acid of which both cis- and trans- isomers are found in butter and other animal fats.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
VALI	Valine	An amino acid.	
VCON	Vanadium content	The concentration of vanadium found in a sample.	
VERA	Versicolorin A	A mycotoxin	ECOTOX

BCM BIOCHEMICAL EFFECT			
VEPO	Vitellogenin:protein ratio	The ratio of the amount of vitellogenin to the amount of protein in an organism.	
VIDD	Retinyl palmitate:Dehydroretinyl palmitate	Ratio of Retinyl palmitate to Dehydroretinyl palmitate found in a sample.	
VITA	Retinol (Vitamin A)	Vitamin A1 alcohol; 2,6,6-trimethyl-1-(9'-hydroxy-3',7'-dimethylnona-1',3',5',7'-tetraenyl)cyclohex-1-ene;a half-carotene bearing the b (or beta-ionone) form of the cyclic end group and a CH <sub>2</sub> OH at the C-15 position (numbering as in carotenoids) or 9'-position (numbering as a nonyl side chain on a cyclohexene ring); an intermediate in the vision cycle, it also plays a role in growth and differentiation. Also known as Retinyl palmitate.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
VITE	Vitellogenin	The serum phospholipoglycoprotein precursor to egg yolk.	
VIVT	Vitellogenin:Vitellin ratio	The amount of Vitellogenin to the amount of Vitellin in a sample.	
VLDL	Very low density lipoprotein	Composed mostly of cholesterol, with little protein and used to transport cholesterol, triglycerides and other lipids to various tissues. Often called "bad cholesterol" because it deposits cholesterol on the walls of arteries.	NIH-Medline
VLXN	Violaxanthine	Carotenoid pigments involved in photosynthesis. Consist of oxygenated carotenes, e.g., lutein, violaxanthin and neoxanthine.	
VMAC	Vanillylmandelic acid	A metabolite of norepinephrine.	
VPRO	Vimentin	An intermediate filament protein found in mesodermally derived cells including muscle.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
VTAE	Vitamin A ester (Retinyl ester)	A compound that has a fatty acid bound to the alcohol group of retinol.	<a href="http://www.canr.uconn.edu/nusci/hpg/fatsolublenotes.pdf">http://www.canr.uconn.edu/nusci/hpg/fatsolublenotes.pdf</a>
VTD3	Vitamin D3	Also called cholecalciferol; fat soluble vitamin.	

BCM BIOCHEMICAL EFFECT			
VTME	Vitamin E	Any of a series of eight related compounds called tocopherols, alpha-tocopherol having the highest biological activity; occurs in wheat germ and other naturally occurring oils.	
WTCO	Water Content	The amount of water found in a sample.	
<YLKE>	Yolk Energy	No definition available.	
ZEAR	Zearalenone	Zearalenone or (s-(e))-3,4,5,6,8,10-hexahydro-14,16-dihydroxy-3-methyl-1h-2-benzoxacyclotetradecin-1,7(8h)-dione. One of a group of compounds known under the general designation of resorcylic acid lactones. Cis, trans, dextro and levo forms have been isolated from the fungus gibberella zeae (formerly fusarium graminearum). They have oestrogenic activity, cause toxicity in livestock as feed contaminant, and have been used as anabolic or oestrogen substitutes.	cancerweb.ncl.ac.uk
ZNAI	Zinc Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	
ZNCD	Zinc to cadmium ratio	Ratio of zinc to cadmium in an organism or organism's tissues.	
ZNCO	Zinc Content	Necessary in trace amounts in the body; it forms an essential part of enzymes and plays an important role in protein synthesis and cell division.	
ZNFE	Zinc to iron ratio	Ratio of zinc to iron in an organism or organism's tissues.	
ZNNA	Zinc to sodium ratio	Ratio of zinc to sodium in an organism or organism's tissues.	
ZNPP	Zinc protoporphyrin	A tightly bound, specific non-polypeptide unit required for the biological function of some proteins. A prosthetic group consisting of a protoporphyrin ring and a central iron (Zn) atom. High levels of zinc protoporphyrin (ZPP) in blood indicate lead exposure.	<a href="http://www.clunet.edu/BioDev/omm/catalase/frames/hemetx.htm">http://www.clunet.edu/BioDev/omm/catalase/frames/hemetx.htm</a>
ZPP2	Zona pellucide protein 2	A glycoprotein that helps form a non-cellular membrane around a developing egg.	ECOREF 67746

BCM BIOCHEMICAL EFFECT			
ZPRO	Zona Radiata Protein	Also known as: vitelline envelope, zona radiata, or eggshell protein. A protein involved in the thickening of the cell membrane of the ovum.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

ENZ ENZYME EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Note
17BH	17beta-hydroxysteroid dehydrogenase	An enzyme of the oxidoreductase class that catalyze the dehydrogenation of hydroxysteroids.	cancerweb.ncl.ac.uk
2OHB	2-OH Biphenyl Hydroxylase	No definition available.	
3HAO	3-Hydroxyanthranilate oxygenase	An enzyme.	
450R	NADPH-cytochrome P-450 Reductase	No definition available.	
4CBH	4-chlorobiphenyl hydroxylase	An enzyme.	ECOTOX
4OHB	4-OH Biphenyl Hydroxylase	No definition available.	
5NLT	5-Nucleotidase activity	A liver enzyme that can be measured in the bloodstream. It can be a specific indicator for liver disease when it is elevated.	
AAPT	Alanine aminopeptidase	Catalysis of the release of an N-terminal amino acid, preferentially alanine, from an oligopeptide or polypeptide.	<a href="http://www.informatics.jax.org/searches/GO.cgi?id=GO:0016284">http://www.informatics.jax.org/searches/GO.cgi?id=GO:0016284</a>
AATT	Alanine Aminotransferase	Abbreviated as ALT.	
AATA	Acyl coenzyme A:testosterone acyltransferase	An enzyme responsible for testosterone esterification	Gooding et al, Environ Health Perspect. (2003) 111(4): 426-430
ACAC	Acetyl-CoA carboxylase	A carboxylating enzyme that catalyses the conversion of ATP, acetyl-CoA, and hco3- to ADP, orthophosphate, and malonyl-CoA. It is a biotinyl-protein that also catalyses transcarboxylation. The plant enzyme also carboxylates propanoyl-CoA and butanoyl-CoA	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

ENZ ENZYME EFFECT			
ACHE	Acetylcholinesterase	An enzyme that breaks down unused acetylcholine in the synaptic cleft (the space between neurons), this enzyme is necessary to restore the synaptic cleft so it is ready to transmit the next nerve impulse.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ACOH	Acetanilide-4-hydroxylase	A marker for CYP1A2.	ECOREF#75745
ACPH	Acid Phosphatase	No definition available.	
ADNY	Adenylate	An enzyme that catalyzes the formation of cyclic AMP from ATP.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
AEPX	Aldrin Epoxidase	No definition available.	
AFCD	alpha-Fucosidase	An enzyme that catalyzes the hydrolysis of an alpha-l-fucoside, producing an alcohol and l-fucose; a deficiency of the lysosomal enzyme will result in fucosidosis.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AGCE	Angiotensin converting enzyme	An enzyme of the hydrolase class that catalyzes cleavage of the leucine leucine bond in angiotensin to generate angiotensin. The enzyme is synthesized as inactive prorenin in the kidney and released into the blood in the active form in response to va	
AGCT	alpha-Galactosidase	An enzyme that catalyzes the hydrolysis of terminal, non-reducing alpha-d-galactose residues in alpha-galactosides including galactose oligosaccharides, galactomannans, and galactolipids.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AGKN	Arginine kinase	Acts to maintain steady-state ATP concentrations by mobilizing stores of high energy phosphate during periods of rapid ATP hydrolysis.	
AGPD	alpha-glycerol phosphate dehydrogenase	NAD-dependent glycerol-3-phosphate dehydrogenase ( 1.1.1.8 ) (GPD) catalyzes the reversible reduction of dihydroxyacetone phosphate to glycerol-3-phosphate. It is a cytoplasmic protein, active as a homodimer, each monomer containing an N-terminal NAD binding site. In insects, it acts in conjunction with a mitochondrial alpha-glycerophosphate oxidase in the alpha-glycerophosphate cycle, which is essential for the production of energy used in insect flight.	<a href="http://www.ebi.ac.uk/interpro/DisplayProEntry?ac=IPR006109">http://www.ebi.ac.uk/interpro/DisplayProEntry?ac=IPR006109</a>

ENZ ENZYME EFFECT			
AGSE	alpha-Glucosidase	Enzymes that catalyze the exohydrolysis of 1,4-alpha-glucosidic linkages with release of alpha-glucose. Also known as alpha-D-Glucoside glucohydrolases	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AGTF	Alanine gamma-glutamyltransferase	An enzyme.	
AHDX	Aniline Hydroxylase	No definition available.	
<AHHD>	Aryl Hydrocarbon Hydrolase	No definition available.	
AKPT	Alkaline protease	These proteases work best in the pH range of 8 to 11 and are used widely in washing powders and to de-hair hides.	
AKPY	Alkaline pyrophosphatase	A group of enzymes within the class EC 3.6.1.- that catalyze the hydrolysis of diphosphate bonds, chiefly in nucleoside di- and triphosphates. They may liberate either a mono- or diphosphate.	
ALAD	(Delta) $\Delta$ -Aminolevulinic Acid Dehydratase	Also known as (Delta) $\Delta$ -Aminolevulinic Acid Dehydrase.	
ALAS	(Gamma) $\Gamma$ -ala Synthetase	No definition available.	
ALDH	Aldehyde dehydrogenase (ALDH)	An enzyme that catalyzes the conversion of an aldehyde to its corresponding acid.	
ALDO	Aldolase	An enzyme in anaerobic glycolysis that catalyzes the cleavage of fructose 1,6-diphosphate to glyceraldehyde 3-phosphate.	
ALIE	Ali esterase	Ali esterase also known as carboxylesterase which catalyzes a carboxylic ester to yield an alcohol and carboxylic acid anion; has wide specificity; also hydrolyzes vitamin a esters; can be used to separate stereoisomers; consider also esterase b which is a serine protease.	
ALLN	Allantoinase Activity	An enzyme (an amidohydrolase) that catalyses the hydrolysis of allantoin to allantoic acid.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

ENZ ENZYME EFFECT			
ALPH	Alkaline Phosphatase	An enzyme that catalyses the cleavage of inorganic phosphate non-specifically from a wide variety of phosphate esters and having a high (greater than 8) pH optimum. Found in bacteria, fungi and animals but not in higher plants.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ALTM	Alanine transaminase	An enzyme that catalyses the conversion of l-alanine and 2-oxoglutarate to pyruvate and l-glutamate.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AMYL	Alpha-amylase	An enzyme that catalyses the endohydrolysis of 1,4-alpha-glycosidic linkages in starch, glycogen, and related polysaccharides and oligosaccharides containing 3 or more 1,4-alpha-linked d-glucose units.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AMNS	alpha-Mannosidase	Catalyzes hydrolysis of terminal, non-reducing alpha-d-mannose residues in alpha-d-mannosides. Also known as alpha-d-mannoside mannohydrolase, alpha-d-mannosidase, neutral alpha-mannosidase, alpha mannosidase a, alpha mannosidase b, lysosomal alpha-mannosidase, laman.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AMPD	Aminopeptidase	any member of a sub-subclass of enzymes of the hydrolase class that catalyze the hydrolytic cleavage of the N-terminal amino acid or dipeptide from a peptide chain; they are exopeptidases and occur in plasma and many tissues.	<a href="http://www.mercksource.com/pp/us/cn">www.mercksource.com/pp/us/cn</a>
AMTR	Arsenite methyltransferase	An enzyme of the biotransformation pathway that forms methylarsonate from inorganic arsenite.	
ANAE	A-naphthyl Acetate Esterase	No definition available.	
APND	Aminopyrine N-demethylase	No definition available.	
APRT	Acid Protease	Any of many protein-hydrolyzing enzymes that work best in an acidic solution (usually in a pH range of 2-6). Such proteases include the stomach enzymes pepsin and rennin	



ENZ ENZYME EFFECT			
APYR	Acid pyrophosphatase	A group of enzymes within the class EC 3.6.1.- that catalyze the hydrolysis of diphosphate bonds, chiefly in nucleoside di- and triphosphates. They may liberate either a mono- or diphosphate.	
AREG	Arachidonate epoxygenase	Synonym- Arachidonic Acid Epoxygenase. Requires cytochrome p-450; uses NADPH and oxygen; forms 5,6-,8,9-11,12- and 14,15-cis-epoxyeicosatrienoic acids; p4502caa is the form isolated from rabbit renal cortex	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ARHY	Aromatic hydroxylase	Enzyme is concentrated in the hepatic endoplasmic reticulum.	Free Online Medical Dictionary
ARMT	Aromatase	An enzyme which converts androgens to estrogens by desaturating ring a of the steroid. This enzyme complex is located in the endoplasmic reticulum of estrogen-producing cells including ovaries, placenta, testicular sertoli and leydig cells, adipose, and b. Also known as Estrogen synthetase or P450Arom	
ASAT	Aspartate Aminotransferase	Usually abbreviated as AST.	
ASCP	Ascorbate peroxidase	An enzyme.	
ASMT	Arsenite methyl transferase	an enzyme	
ASOA	Ascorbic Acid Oxidase Activity	A copper containing enzyme found in higher plants where it catalyzes the reversible oxidation of ascorbate to 2-dehydro-ascorbate acid with the concomitant reduction of molecular oxygen to water.	<a href="http://www.cordis.lu/tmr/src/grants/fair/975021.htm">http://www.cordis.lu/tmr/src/grants/fair/975021.htm</a>

ENZ ENZYME EFFECT			
ASPT	Arylsulphatase	Aryl sulphatases A, B and C comprise a group of enzymes originally assayed by their ability to hydrolyze O sulphate esters of aromatic substrates. Aryl sulphatase A, substrate cerebroside 3 sulphate, is deficient in metachromatic leukodystrophy. Aryl sulphatase B, substrate acetylhexosamine 4 sulphate in glycosaminoglycans, is deficient in Maroteaux-Lamy syndrome. Aryl sulphatase C hydrolyses oestrogen sulphates. All three are deficient in multiple sulphatase deficiency.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ATPA	Adenosine Triphosphatase	A group of enzymes which catalyze the hydrolysis of ATP coupled with another function such as transporting calcium across a membrane. These enzymes may be dependent on calcium, magnesium, anions, h <sup>+</sup> , or DNA.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ATRP	Alanine Transpeptidase	No definition available.	
B5P4	b5/P-450	No definition available.	
BAMY	Beta-amylase	An enzyme that catalyses the hydrolysis of 1,4-alpha-glycosidic linkages in starch, glycogen, and related polysaccharides and oligosaccharides so as to remove successive beta-maltose units from the non-reducing ends of the chains.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
BAPH	Benzo(a)pyrene Hydroxylase	No definition available.	
BAPM	Benzo(a)pyrene monooxygenase	An enzyme that catalyses the incorporation of one oxygen atom of molecular oxygen into benzo(a)pyrene.	
BCHE	Buterylcholinesterase	No definition available.	
BCOD	Butoxycoumarin O-dealkylase	No definition available.	

ENZ ENZYME EFFECT			
BGAL	(Beta) B-galactosidase	One of a class of enzymes which cuts the glycosidic bond between the sugar galactose and another sugar molecule (of a different type than galactose). There are two subclasses - the alpha galactosidases and beta galactosidases - which cuts the two types of glycosidic bonds (alpha and beta, respectively).	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
BGCR	beta-Glucuronidase	beta-Glucuronidase hydrolyzes conjugated glucuronides. It is ubiquitous in animal lysozymes. The enzyme has found wide application in determining urinary steroids.	<a href="http://www.worthington-biochem.com/manual/G/GL.html">http://www.worthington-biochem.com/manual/G/GL.html</a>
BGMD	beta-Glucosaminidase	Cleaves all non-reducing terminal beta-linked N-acetylglucosamine.	<a href="http://www.prozyme.com/glycopro/index.html#GE30">http://www.prozyme.com/glycopro/index.html#GE30</a>
BGSE	beta-Glucosidase	An enzyme that catalyzes the hydrolysis of terminal non-reducing residues in beta-d-glucosides with release of beta-glucose. Also known as beta-D-Glucoside glucohydrolase.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
<BHXA>	Benzpyrene Hydroxylase	No definition available.	
BN4H	Bunitrolol 4-hydroxylase	Mediated by cytochrome p-450; catalyses the hydroxylation of bunitrolol	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>
BPND	Benzphetamine-n-demethylase	No definition available.	
BROD	Benzylresorufin O-deethylase	No definition available.	
C1A2	Cytochrome P-450 1A2	A polycyclic aromatic hydrocarbon-inducible cytochrome which is of significant clinical interest due to the large number of drug interactions associated with induction and inhibition of theophylline. Caffeine is considered to be a model substrate for this enzyme. It also metabolizes theophylline and antipyrine. Environmental factors including cigarette smoking, charbroiled meat, cruciferous vegetables, and a number of drugs including phenytoin, phenobarbital, and omeprazole produce increases in cyp1a2 activity.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

ENZ ENZYME EFFECT			
C2D6	Cytochrome p-450 cyp2d6	A polymorphic enzyme that catalyses the hydroxylation of debrisoquine. It also metabolizes several antidepressants and neuroleptics. This enzyme is deficient in up to 10 percent of the population.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
C2K1	Cytochrome P450 2K1	A microsomal cytochrome p450 isoform protein. (CYP2K1)	
C2M1	Cytochrome P450 2M1	A microsomal cytochrome p450 isoform protein. (CYP2M1)	
CA27	Cytochrome P450 3A27	A microsomal cytochrome p450 isoform protein. (CYP3A27)	
CAAH	Carbonic Anhydrase	No definition available.	
CACA	Choline Acetyltransferase	An enzyme that controls the production of acetylcholine, appears to be depleted in the brains of Alzheimer patients.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CAPK	Choline phosphokinase	Also known as choline kinase and choline phosphotransferase. An enzyme that is active in the first step of choline phosphoglyceride (lecithin) biosynthesis by catalyzing the phosphorylation of choline to phosphorylcholine in the presence of ATP.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CATP	Calcium ATPase	Usually used of the calcium pumping ATPase present in high concentration as an integral membrane protein of the sarcoplasmic reticulum of muscle. This pump lowers the cytoplasmic calcium level and causes contraction to stop. Normal function of the pump seems to require a local phospholipid environment from which cholesterol is excluded.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CCAT	Calcium Carbonate ATPase	No definition available.	
CCOX	Cytochrome C-oxidase	An enzyme complex of the inner mitochondrial membrane that catalyses the reaction between ferrocytochrome c and oxygen to yield ferricytochrome c and water.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CEST	Cholinesterase	An enzyme found in blood and in various other tissues that catalyzes hydrolysis of choline esters, including acetylcholine.	

ENZ ENZYME EFFECT			
CHIT	Chitobiase	One of the lysosomal glycosidases called Chitobiase belongs to a special family of proteins that hydrolyze the polysaccharide chitin	
CP1A	Cytochrome P1A (CYP1A)	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; P1A = pigment 1A	
CPDE	Cytochrome P450-dependent O-deethylation activity	An enzyme	ECOTOX
CPOD	Cytochrome P450 dependent O-demethylase	An enzyme	ECOTOX
CPSE	Creatine phosphokinase	An enzyme that is contained in skeletal muscle, smooth muscle and cardiac muscle. Creatine phosphokinase is released into the bloodstream in increased quantities if muscle is injured. Creatine phosphokinase can be fractionated so that specific measurements can be made for blood levels of creatine phosphokinase that comes exclusively from damaged heart muscle.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CRKI	Creatine Kinase	An enzyme of vertebrate skeletal and myocardial muscle that catalyzes the transfer of a high-energy phosphate group from phosphocreatinine to adenosinediphosphate with the formation of adenosinetriphosphate and creatinine.	
CSYN	Citrate synthase	An enzyme of the lyase class that catalyzes the condensation of oxaloacetate and the acetyl group of coenzyme a to form citrate and coenzyme a. This is the initial reaction in the tricarboxylic acid cycle.	

ENZ ENZYME EFFECT			
CTHP	Cathepsin	Intracellular proteolytic enzymes of animal tissues, such as cathepsin B, a lysosomal thiol proteinase, C, dipeptidyl peptidase, D, that has pepsin like specificity, G, similar to chymotrypsin, H, that possesses aminopeptidase activity, N, that attacks N terminal peptides of collagen and so on.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CTLS	Catalase	An enzyme that catalyzes the decomposition of hydrogen peroxide into molecular oxygen and water.	
CTMT	Catechol o-methyltransferase	An enzyme of the transferase class that catalyzes the transfer of a methyl group from s-adenosylmethionine to a catechol or catecholamine such as dopa, dopamine, norepinephrine, or epinephrine (converting to normetanephrine and metanephrine, respectively)	
CTNS	Chitinase	An enzyme which breaks down chitin, which is a polysaccharide that forms the hard outer shell of arthropods (insects, spiders, crustaceans, etc.), and the cell walls of fungi, and some algae.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CYAA	Cytochrome aa3	An enzyme complex of the inner mitochondrial membrane that catalyzes the reaction between ferrocytochrome c and oxygen to yield ferricytochrome c and water. It is associated with the pumping of protons and the resultant phosphorylation of ADP to ATP. The reaction is the terminal event in the electron transport scheme by which oxygen is used for fuel combustion. It is a part of Complex IV of the respiratory chain. A deficiency of one or more of the polypeptides of this complex results in neuronal loss in brain leading to psychomotor retardation and neurodegenerative disease.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CYAM	Cystine aminopeptidase	Cystine an amino acid combined with Aminopeptidase which is an enzyme that removes the N terminal amino acid from a protein or peptide.	partial definition from: <a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a>

ENZ ENZYME EFFECT			
CY2B	Cytochrome P2B (CYP2B)	One of the intracellular hemoprotein respiratory pigments that are enzymes functioning in electron transport as carriers of electrons	
CY2C	Cytochrome P-450 CYP2C	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; found in the endoplasmic reticulum that acts as an intermediary in MFO reactions.	
CYB5	Cytochrome B-5	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; found in the endoplasmic reticulum that acts as an intermediary in MFO reactions.	
CYCC	Cytochrome c + c1	Cytochrome c is a type of cytochrome, a protein which carries electrons, that is central to the process of respiration in mitochondria (an organelle found in eukaryotes which produces energy). Cytochrome c1 is the 30-kD membrane-bound c-type protein of mitochondria that functions as an electron donor to cytochrome c in the mitochondrial and bacterial respiratory chain.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CYP2	Cytochrome P2	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; found in the endoplasmic reticulum that acts as an intermediary in MFO reactions.	

ENZ ENZYME EFFECT			
CYP3	Cytochrome P3A	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; found in the endoplasmic reticulum that acts as an intermediary in MFO reactions.	
CYST	Cysteine Dioxygenase	No definition available.	
CYTA	Cytochrome P450A	A cytochrome when the heme contains a formyl side chain and a cytochrome with a protoheme IX prosthetic group.	(Dorland's Medical Dictionary)
CYTB	Cytochrome b	Cytochromes (electron-transporting proteins) with protoheme or a related haem as the prosthetic group. The prosthetic group is not covalently bound to the protein moiety.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CZSD	Copper Zinc superoxide dismutase	CuZn superoxide dismutase (CuZnSOD) catalyses the dismutation reaction of the total superoxide radical to molecular oxygen and hydrogen peroxide. This type of SOD is distinguished by its metal prosthetic group, Cu/Zn.	From Molecular Biophysics Group
DBHD	delta-5-3-beta hydroxysteroid dehydrogenase	Converts dehydroepiandrosterone to delta-4-androstene-3,17-dione	
DBHX	Dopamine beta-hydroxylase	This enzyme converts dopamine into norepinephrine	<a href="http://www.behavenet.com/capsules/neurochem/dopaminebetahydroxylase.htm">www.behavenet.com/capsules/neurochem/dopaminebetahydroxylase.htm</a>
DEAS	Dehydroascorbate	Catalyzes the hydrolysis of the gamma lactone, dehydroascorbate, to diketogulonate.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
DHYD	NADPH Dehydrogenase	A flavoprotein that reversibly oxidises NADPH to NADP and a reduced acceptor.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
DSCA	Diethylsuccinase	No definition available.	
DTDP	DT-diaphorase	Prevents the redox cycling of certain compounds.	
ECOD	Ethoxycoumarin O-deethylase	No definition available.	
ENCL	Endocellulase	An enzyme that is able to break beta 1-4 bonds randomly along a cellulose strand.	



ENZ ENZYME EFFECT			
ENDM	Ethylmorphine-n-demethylase	No definition available.	
EPHY	Epoxide Hydrase	Also Epoxide Hydrolase No definition available.	
EPND	EPN (O-Ethyl-O-p-nitrophenyl phenylphosphonothionate) detoxification	No definition available.	
EROD	7-Ethoxyresorufin O-deethylase	No definition available.	
ESLI	Esterase lipase	Esterase is an enzyme that catalyses the hydrolysis of organic esters to release an alcohol or thiol and acid. Lipase is an enzyme that catalyses the hydrolysis of fats (monoglycerides, diglycerides and triglycerides) to glycerol and fatty acids.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ESST	Estradiol sulfotransferase	Estrogen sulfotransferase (EST) catalyzes the sulfation of estrogens such as estradiol and estrone, using the cofactor 3'-phosphoadenosine-5'-phosphosulfate (PAPS).	<a href="http://www.epa.gov/endorcine/inventory/NI-EH-091.html">http://www.epa.gov/endorcine/inventory/NI-EH-091.html</a>
ESTE	Esterase	Any group of enzymes that catalyze the synthesis and hydrolysis of esters.	
ESTS	Elastase	Serine protease that will digest elastin and collagen type IV, inhibited by $\alpha_1$ protease inhibitor of plasma.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
EXCL	Exocellulase	An enzyme that is able to cleave the glucose molecules from the ends of cellulose strands	
F16D	Fructose 1,6-diphosphatase	Fructose 1,6-diphosphatase (FDPase) (also termed fructose 1,6-bisphosphatase) is a focal enzyme in gluconeogenesis via its conversion of fructose 1,6-diphosphate (FDP) to fructose 6-phosphate (F-6-P), which permits endogenous glucose production from.	
F6PD	Fructose-6-phosphate dehydrogenase	enzyme that catalyses the dehydrogenation (oxidation) of d-glucose-6-phosphate	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
FDPA	Fructose-diphosphate Aldolase	No definition available.	

ENZ ENZYME EFFECT			
FESD	Iron superoxide dimutase	Fe superoxide dimutase (FeSOD) catalyses the dimutation reaction of the toxic superoxide radical to molecular oxygen and hydrogen peroxide. This type of SOD is distinguished by its metal prosthetic group, Fe.	From University of Leeds PROMISE database
FMOO	Flavin-containing monooxygenase (FMO)	A microsomal enzyme responsible for metabolism of some drugs.	<a href="http://www.fda.gov/cder/drug/drugReactions/default.htm">http://www.fda.gov/cder/drug/drugReactions/default.htm</a>
G6PD	Glucose-6-phosphate Dehydrogenase	No definition available.	
G6PT	Glucose-6-phosphatase	An enzyme that catalyzes the conversion of d-glucose 6-phosphate and water to d-glucose and orthophosphate.	
GCTA	Glucosyltransferase	An enzyme which transfers residues of glucose (a sugar) to acceptor molecules.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GENZ	Enzyme, General	Change in enzyme activity or enzyme protein levels.	
GGCS	gamma-Glutamylcysteine synthetase	An enzyme that catalyses the first step in glutathione biosynthesis, reacting l-glutamate, l-cysteine, and ATP to form gamma-glutamylcysteine, ADP, and orthophosphate; inhibited by thiols such as glutathione.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GGTP	gamma-glutamyl transpeptidase	An enzyme contained in the liver that plays a role in metabolism.	
GGTR	(Gamma) $\Gamma$ -glutamyl Transferase**	No definition available. (**GGT is also used for gamma glutamyl transpeptidase, a liver enzyme; prior to using the GGTR code verify that indeed GGT is used as the transferase in the current publication. The gamma glutamyl transpeptidase code is GGTP (proposed code).)	
GLAD	Glutamic Acid Dehydrogenase	Enzymes that catalyze the reaction of l-glutamate, H <sub>2</sub> O, and NAD <sup>+</sup> (or NADP <sup>+</sup> in some cases) producing alpha-ketoglutarate (2-oxoglutarate), ammonia, and NADH; in mammals, this is the prime contributor to oxidative deamination.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

ENZ ENZYME EFFECT			
GLMC	Glutamate decarboxylase	A pyridoxal-phosphate protein that catalyzes the alpha-decarboxylation of l-glutamic acid to form gamma-aminobutyric acid and carbon dioxide. The enzyme is found in bacteria and in invertebrate and vertebrate nervous systems. It is the rate-limiting enzyme in determining gaba levels in normal nervous tissues. The brain enzyme also acts on l-cysteate, l-cysteine sulfinic acid, and l-aspartate.	<a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a>
GLMD	Glutamate Dehydrogenase	An enzyme that catalyses the conversion of l-glutamate and water to 2-oxoglutarate and nh3 in the presence of NAD+.	<a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a>
GLMS	Glutamine Synthetase	An enzyme which catalyzes the formation of glutamine from glutamic acid and ammonia, using ATP as a source of energy.	
GLMT	Glutamate transferase	No definition available.	
GLPP	Glycogen phosphorylase	Enzyme that catalyses the sequential removal of glycosyl residues from glycogen to yield one glucose-1-phosphate per reaction. Its activity is controlled by phosphorylation (by phosphorylase kinase).	<a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a>
GLPX	Glutathione Peroxidase	Glutathione peroxidase catalyzes the reduction of various organic hydroperoxides, as well as hydrogen peroxide, with glutathione as hydrogen donor.	
GLRE	Glutathione Reductase	An FAD containing enzyme, a dimer of 50 kD subunits. It catalyses the NADP dependent reduction of glutathione disulphide (GSSG) to glutathione (GSH). This is an essential reaction that maintains a GSH:GSSG ratio in the cytoplasm of _500:1.	<a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a>
GLTR	Glucuronyl Transferase	No definition available.	
GLUR	(Beta) B-glucuronidase	No definition available.	
GLUT	Glutaminase	An enzyme.	
GLYD	Glyceraldehyde Dehydrogenase	No definition available.	

ENZ ENZYME EFFECT			
GMPP	Cyclic guanylic acid phosphodiesterase, cGMP PDE	An enzyme involved with the process of sight.	
GOTR	Glutamic-oxaloacetic Transaminase	An enzyme catalyzing the reversible transfer of an amine group from l-glutamic acid to oxaloacetic acid, forming alpha-ketoglutaric acid and l-aspartic acid; a diagnostic aid in viral hepatitis and in myocardial infarctions.	<a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a>
GPIM	Glucose phosphate isomerase	An enzyme that converts glucose-6-phosphate to its positional isomer glucose-1-phosphate.	
GPTR	Glutamic Pyruvic Transaminase	An enzyme that is found primarily in the liver. It is released into the bloodstream as the result of liver damage. Also called the alanine aminotransferase (ALT) or serum glutamic pyruvic transaminase (SGPT).	<a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a>
GSTR	Glutathione S-transferase	A class of enzymes that catalyze the reaction of glutathione with an acceptor molecule (e.g., an arene oxide) to form an S-substituted glutathione; a key step in detoxification of many substances; start of the mercapturic acid pathway.	<a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a>
GTPD	Glutamyl transpeptidase	A membrane-bound glycoprotein necessary for the formation of mercapturic acids from glutathione conjugates, This enzyme has a number of acceptor amino acids and catalyzes three reactions.	
GULO	L-Gulonolactone oxidase	an enzyme which oxidizes l-gulonolactone to 2-keto-l-gulonolactone.	<a href="http://www.positivehealth.com/permit/Articles/Nutrition/vitc3.htm">http://www.positivehealth.com/permit/Articles/Nutrition/vitc3.htm</a>

ENZ ENZYME EFFECT			
GUPX	Guaiacol Peroxidase	Plant peroxidase. Guaiacol peroxidases have also been found in sterile root exudates and shown to oxidize Mn <sup>2+</sup> to form Mn <sup>3+</sup> chelates that are capable of decolorizing aromatic dyes. Peroxidase is commonly assayed by noting the development of color (A <sub>470</sub> ) during the oxidation of a simple phenolic compound, guaiacol (ortho-methoxyphenol). For every four molecules of H <sub>2</sub> O <sub>2</sub> that are reduced, one molecule of tetraguaiacol is formed.	<a href="http://lbewwww.epfl.ch/COST837/PhytoRemed2000_Files/Session2.pdf">http://lbewwww.epfl.ch/COST837/PhytoRemed2000_Files/Session2.pdf</a> <a href="http://www-plb.ucdavis.edu/courses/s99/plb111/Enzymes.html">http://www-plb.ucdavis.edu/courses/s99/plb111/Enzymes.html</a> .
3HCD	3-hydroxyacyl-CoA dehydrogenase	an enzyme that reversibly catalyzes the oxidation of a 3-hydroxyacyl CoA to 3-ketoacyl CoA in the presence of NAD. They are key enzymes in the oxidation of fatty acids and in mitochondrial fatty acid synthesis.	cancerweb.ncl.ac.uk
HAFS	N-Hydroxy-2-acetylaminofluorene sulfotransferase	A growth hormone dependant, liver enzyme involved in the microsomal metabolism of testosterone.	ECOREF 58214
HBDS	alpha-Hydroxybutyrate dehydrogenase	An enzyme.	
HAHY	Hydroxyacylglutathione hydrolase	An enzyme with catalytic activity similar to that of lactoylglutathione lyase, but more general; catalyses the hydrolysis of an S-2-hydroxyacylglutathione, producing glutathione and a 2-hydroxy acid anion. Also glyoxalase II.	cancerweb.ncl.ac.uk
HCAD	3-hydroxyacyl-CoA dehydrogenase	Beta-Hydroxyacyl dehydrogenase; enzyme catalyzing the oxidation of an L-3-hydroxyacyl-CoA to a 3-ketoacyl-CoA with reduction of NAD <sup>+</sup> ; one of the enzymes of the $\beta$ oxidation of fatty acids.	cancerweb.ncl.ac.uk
HCAR	beta-hydroxy-beta-methylglutaryl-CoA reductase	Also known as 3-Hydroxy-3-methylglutaryl-coenzyme A reductase. Beta-hydroxy-beta-methylglutaryl-reductase, an enzyme that catalyses the rate-limiting step of cholesterol biosynthesis, beta-hydroxy-beta-methylglutaryl-CoA + 2NADPH + 2H <sup>+</sup> $\rightarrow$ mevalonate + 2NADP <sup>+</sup> + coenzyme A.	<a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a>

ENZ ENZYME EFFECT			
HEPX	Heptachlor epoxidase	No definition available.	
HOXY	Heme oxygenase (Haem oxygenase)	A mixed function oxidase enzyme which during haemoglobin catabolism catalyses the degradation of haem to ferrous iron, carbon monoxide and biliverdin in the presence of molecular oxygen and reduced NADPH. The enzyme is induced by metals, particularly cobalt.	<a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a>
HPSE	Hydrogen Peroxidase	No definition available.	
HXBH	Hexobarbital Hydroxylase	Hexobarbital goes to 3-hydroxyhexobarbital	<a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a>
HXKN	Hexokinase	Enzyme responsible for glucose phosphorylation to glucose-6-phosphate.	
ICDH	Isocitrate dehydrogenase	An enzyme of the oxidoreductase class that catalyses the conversion of isocitrate and NAD <sup>+</sup> to yield 2-ketoglutarate, carbon dioxide, and NADH. It occurs in cell mitochondria. The enzyme requires magnesium, mn <sup>2+</sup> ; it is activated by ADP, citrate, and calcium, and inhibited by NADH, NADPH, and ATP.	<a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a>
ICLY	Isocitric lyase	An enzyme unique to the glyoxylate cycle which enables plant tissues to utilize triglycerides as an energy source.	ECOREF#73229
IPYR	Inorganic pyrophosphate	A chemical that can block bone mineral crystal formation.	<a href="http://www.homestead.com/hypophosphatasia/files/page8.html">http://www.homestead.com/hypophosphatasia/files/page8.html</a>
ITMD	Iodothyronine 5'-monodeiodinase	An integral membrane bound selenoenzyme	ECOREF 48163
LADH	Lactate Dehydrogenase	An enzyme with 5 forms: LDH-1 is in the heart, its blood level can rise when heart muscle is damaged. Other forms can be found in the liver, brain, kidney, skeletal muscle and bone. Usually abbreviated as LDH.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LCDH	Lactic dehydrogenase	The enzyme that catalyses the formation and removal of lactate according to the equation: pyruvate + NADH = lactate NAD.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

ENZ ENZYME EFFECT			
LDMD	Lactate Dehydrogenase/malic Dehydrogenase Ratio	No definition available.	
LGLY	Lactoylglutathione lyase	An enzyme that catalyses the interconversion of methylglyoxal and lactate, with glutathione serving as a coenzyme. Also S-Lactoyl-glutathione methylglyoxal-lyase (isomerizing), or glyoxalase I.	cancerweb.ncl.ac.uk
LEAM	Leucine aminopeptidase	An exopeptidase that removes neutral amino acid residues from the N terminus of proteins.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LGDD	L-Gulonate dehydrogenase and decarboxylase	Enzymes involved in the metabolism of L-ascorbic acid.	ECOREF 58373
LIPS	Lipase	Any of many enzymes that help break down lipids by catalyzing the fraction of an ester linkage.	
LNSE	I-Leucyl-beta-naphthylamide splitting enzyme	Frequently used to test for leucine aminopeptidase (ec 3.4.11.1) activity; hydrolyzes naphthylamides of leucine.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LPXG	Liperoxygenase	Enzyme that catalyses the oxidative conversion of arachidonic acid to the hydroxyecosenoic acid (HETE) structure in the synthesis of leucotrienes.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LPLP	Lipoprotein lipase	An enzyme of the hydrolase class that catalyses the reaction of triacylglycerol and water to yield diacylglycerol and a fatty acid anion. The enzyme hydrolyzes triacylglycerols in chylomicrons, very-low-density lipoproteins, low-density lipoproteins, and diacylglycerols. It occurs on capillary endothelial surfaces, especially in mammary, muscle, and adipose tissue. Genetic deficiency of the enzyme causes familial hyperlipoproteinaemia type I.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LPPR	Liperoxide	a product of the oxidation of unsaturated lipids	( <a href="http://64.233.167.104/search?q=cache:1gRkyBs7mKEJ:www.apsnet.org/phyto/PDFS/1999/0819-03R.pdf+Lipoperoxide&amp;hl=en&amp;start=93">http://64.233.167.104/search?q=cache:1gRkyBs7mKEJ:www.apsnet.org/phyto/PDFS/1999/0819-03R.pdf+Lipoperoxide&amp;hl=en&amp;start=93</a> )

ENZ ENZYME EFFECT			
LTSE	Lactase	An enzyme that breaks down the milk sugar lactose.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LUCI	Luciferase	Enzymes present in certain luminous organisms that act to bring about the oxidation of luciferins; energy produced in the process is liberated as bioluminescence; such enzymes can be used to detect very low concentrations of metabolites.	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>
LYSO	Lysyl oxidase	Extracellular enzyme that deaminates lysine and hydroxylysine residues in collagen or elastin to form aldehydes, that then interact with each other or with other lysyl side chains to form crosslinks.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LYZM	Lysozyme activity	Enzyme found in the secretions (tears) of the lacrimal glands of animals and in nasal mucus, gastric secretions, and egg white. Discovered in 1921 by Sir Alexander Fleming, lysozyme catalyzes the breakdown of certain carbohydrates found in the cell walls of certain bacteria (e.g., cocci). It thus functions, in the case of lacrimal fluid.	
MADH	Malic Dehydrogenase	An enzyme that catalyses the conversion of (s)-malate and NAD <sup>+</sup> to oxaloacetate and NADH.	<a href="http://cancerweb.ncl.ac.uk/">http://cancerweb.ncl.ac.uk/</a>
MALE	Malic Enzyme	No definition available.	
MAOA	Mono Amino Oxidase	No definition available.	
MCAT	Magnesium Carbonate ATPase	No definition available.	
MCOD	Methoxycoumarin O-dealkylase	No definition available.	
MG6P	Microsomal Glucose 6-phosphatase	No definition available.	
MGAT	Magnesium ATPase	No definition available.	
MLCB	Malathion Carboxylesterase	No definition available.	
MLDA	Malate dehydrogenase	An enzyme that catalyses the conversion of (s)-malate and NAD <sup>+</sup> to oxaloacetate and NADH.	<a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a>



ENZ ENZYME EFFECT			
MLTS	Maltase	An enzyme that hydrolyzes maltose (and the glucose trimer maltotriose) to glucose, during the enzymic breakdown of starch.	<a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a>
MNSD	Manganese Superoxide Dismutase	No definition available.	
MROD	Methoxyresorufin-o-deet hylase	No definition available.	
MUDH	Multiple Dehydrogenases (Measured Total Produced by Soil Microorganisms)	No definition available.	
NABH	N-acetyl-beta-hexosaminidase	No definition available.	
NAAT	Sodium adenosine triphosphatase	No definition available.	
NACR	NADH-cyt c reductase	Nicotinamide adenine dinucleotide cytochrome C reductase.	
NADH	Nicotinamide adinine dinucleotide (reduced) (NADH)	Activated form of the B vitamin niacin, the first of 5 enzyme complexes of the electron transport chain.	
NADN	Nicotinamide adinine dinucleotide (oxidized) (NAD)	The oxidized (burned) coenzyme form of Vitamin B3.	
NAGD	N-Acetyl-beta-d-glucosamimidase	An enzyme.	
NAOX	Nicotinamide adenine dinucleotide phosphate oxidase (NADPH) Oxidase	A plasma membrane-associated enzyme complex that catalyses the univalent reduction of oxygen using NADPH as an electron donor. The superoxide anion formed acts as an oxidant in the phagocyte microbicidal system, proceeding through a series of electron transfer reactions that form the respiratory burst. Various genetic defects in the system result in chronic granulomatous disease (granulomatous disease, chronic).	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

ENZ ENZYME EFFECT			
NATT	N-Acetyltransferase	An enzyme that catalyzes the transfer of acetyl groups from acetyl-CoA to arylamines. They have wide specificity for aromatic amines, particularly serotonin, and can also catalyze acetyl transfer between arylamines without CoA. EC 2.3.1.5.	<a href="http://www.online-medical-dictionary.org">www.online-medical-dictionary.org</a>
NCB5	NADH cytochrome B5 reductase	Electron transport proteins found in animals, plants and yeasts.	
NCCR	NADPH Cytochrome C Reductase	Nicotinamide adenine dinucleotide phosphate cytochrome C reductase.	
NCTR	Nicotinamide transferase	Catalyses reversibly the methylation of nicotinamide in the presence of s-adenosylmethionine to yield 1-methylnicotinamide and s-adenosylhomocysteine.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NDCC	NADH Cytochrome C Reductase	Nicotinamide adenine dinucleotide cytochrome C reductase.	
NDDP	NADH-DT-diaphorase	No definition available.	
NDFC	NADH ferricyanide reductase	Nicotinamide adenine dinucleotide phosphate ferricyanide reductase.	
NDFH	NADPH-ferrihemoprotein reductase	Nicotinamide adenine dinucleotide phosphate ferrihemoprotein reductase	
NDFR	NADH Ferrichrome Reductase	Nicotinamide adenine dinucleotide ferrichrome reductase.	
NDMT	N-Demethylase	That transfers a methyl group from S adenosyl methionine to a substrate. most commonly encountered in bacterial chemotaxis where the methyl accepting chemotaxis proteins (MCPs) become methylated in the course of adaptation. Also known as methyltransferase.	
NDPD	NADPH-Diaphorase (Nicotinamide Adenine Dinucleotide phosphate Diaphorase)	No definition available.	
NHCR	NADH cytochrome C reductase	No definition available.	
NITG	Nitrogenase Activity	Nitrogenase is a member of a family of enzymes found in nitrogen fixing bacteria that reduce nitrogen to ammonia (also ethylene to acetylene).	<a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a>

ENZ ENZYME EFFECT			
NKAT	Sodium Potassium ATPase	A major transport protein of the plasma membrane. A multi unit enzyme, it moves 3 sodium ions out of the cell and 2 potassium ions in, for each ATP hydrolyzed. The sodium gradient established is used for several purposes (see facilitated diffusion, action potential), while the potassium gradient is dissipated through the potassium leak channel. Must not be confused with a sodium channel.	<a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a>
NNDE	Nitrosamine-N-demethylase	An enzyme.	
NRDT	Nitrate Reductase	No definition available.	
NRED	Nitroreductase	Enzymes which reduce nitro groups.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
O1LH	omega-1-laurate hydroxylase	Steroid metabolizing enzyme.	ECOREF 62306
O2LH	omega-2-laurate hydroxylase	Steroid metabolizing enzyme.	ECOREF 62306
OLHD	omega laurate hydroxylase	Steroid metabolizing enzyme.	ECOREF 62306
ORCT	Ornithine Carbamoyl Transferase	No definition available.	
ORDC	Ornithine decarboxylase	The enzyme that converts ornithine to putrescine (dibasic amine) by decarboxylation. Rate limiting in the synthesis of the polyamines spermidine and spermine that regulate DNA synthesis.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
P1A1	Cytochrome P-450 1A1	An isoenzyme translation product of the P450 subfamily 1A CYP1A gene.	ECOREF 61237
P420	Cytochrome P-420	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; found in the endoplasmic reticulum that acts as an intermediary in MFO reactions.	

ENZ ENZYME EFFECT			
P450	Cytochrome P-450	Isoenzyme, Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; P450 - 450 nm maximum absorption - found in the liver endoplasmic reticular, the renal brush border the outer membrane of the adrenal mitochondria; serves as an intermediate electron carrier in reactions catalyzed by some monooxygenases; active in detoxification of xenobiotics by activating the molecular oxygen for an attack on the substrate	
450C	P450c	No definition available.	
C2D6	cytochrome p-450 cyp2d6	A polymorphic enzyme that catalyses the hydroxylation of debrisoquine. It also metabolises several antidepressants and neuroleptics. This enzyme is deficient in up to 10 percent of the population.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PBES	Phenyl Benzoate Esterase	No definition available.	
PBHD	Pentobarbital Hydroxylase	No definition available.	
PCCX	Picolinate carboxylase	An enzyme.	
PCHE	Pseudocholinesterase	An enzyme involved in the breakdown of acetylcholine. Associated with acetylcholinesterase. Acetylcholinesterase is found in nerve tissue while pseudocholinesterase is found primarily in the liver. Measurement of pseudocholinesterase may be performed as a screening tool prior to the administration of electroconvulsive therapy. It is also useful in identifying organophosphate toxicity or congenital enzyme deficiencies.	

ENZ ENZYME EFFECT			
PCLX	Picoline carboxylase	One of several carboxy-lyases, trivially named carboxylases or decarboxylases (EC subclass 4.1.1), catalyzing the addition of CO <sub>2</sub> to all or part of another molecule to create an additional -COOH group (e.g., ribulose-1,5-bisphosphate carboxylase).	
PCOD	Propoxycoumarin O-dealkylase	No definition available.	
PCTN	Pectinase activity	Random hydrolysis of 1,4-alpha-D-galactosiduronic linkages in pectate and other galacturonans Also called Polygalacturonase or Pectin depolymerase.	<a href="http://www.expasy.ch/cgi-bin/nicezyme.pl?3.2.1.15">http://www.expasy.ch/cgi-bin/nicezyme.pl?3.2.1.15</a>
PFRC	Phosphofructokinase	An enzyme that functions in carbohydrate metabolism and especially in glycolysis by catalyzing the transfer of a second phosphate (as from ATP) to fructose	
PHBG	Porphobilinogen	Chemical name: 1H-Pyrrole-3-propanoic acid, 5-(aminomethyl)-4-(carboxymethyl) an enzyme used by the body to make important substances such as the molecule call heme	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a> <a href="http://health.allrefer.com/health/pbg-info.html">http://health.allrefer.com/health/pbg-info.html</a>
PKSC	Protein kinase C	An enzyme that phosphorylates proteins on serine or threonine residues in the presence of physiological concentrations of calcium and membrane phospholipids.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PHLA	Phosphorylase A	The phosphorylated and more active form of phosphorylase that functions as a regulatory enzyme during glycogen breakdown. The phosphate groups are hydrolytically removed by phosphorylase phosphatase to form phosphorylase be and orthophosphate.	
PHLC	Phospholipase C	An enzyme found in the alpha-toxin of clostridium welchii and other strains of clostridia and bacilli. It hydrolyzes glycerophosphatidates with the formation of 1,2-diacylglycerol and a phosphorylated nitrogenous base such as choline.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PHLD	Phenoloxidase	An enzyme oxidizing benzenediols to semiquinones with O <sub>2</sub> .	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

ENZ ENZYME EFFECT			
PLA2	Phospholipase A2	An enzyme that catalyses the hydrolysis of a lecithin to a lysolecithin by removing the 2-acyl group; also acts on other phospholipids by removing a fatty acid from the 2-position; this enzyme has an important role in prostaglandin and leukotriene biosynthesis.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PNAC	para-Nitrophenyl Acetate Carboxylasterase	No definition available.	
PNAD	P-nitroanisole Demethylase	No definition available.	
PNMT	Phenylethanolamine N-methyl transferase	A methyltransferase that catalyses the reaction of sadenosyl-l-methionine and phenylethanolamine to yield S-adenosyl-l-homocysteine and n-methylphenylethanolamine. It can act on various phenylethanolamines and converts norepinephrine into epinephrine.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PNOD	para-Nitrophenetole-o-deethylase	No definition available.	
PODA	Peroxidase (Pod) Enzyme Activity	An enzyme that catalyzes reactions in which hydrogen peroxide is an electron acceptor.	
PPDE	Phosphodiesterase	An enzyme that cleaves phosphodiesters to give a phosphomonoester and a free hydroxyl group.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PPHL	Phosphorylase	Enzyme that catalyses the sequential removal of glycosyl residues from glycogen to yield one glucose-1-phosphate per reaction. Its activity is controlled by phosphorylation (by phosphorylase kinase).	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PPOX	Polyphenol oxidase	Catechol oxidase - any group of enzymes of the oxidoreductase class that catalyze the oxidation of catechols to 1,2-benzoquinones. The group includes enzymes called also diphenol oxidase or polyphenol oxidase, based on their substrates	Dorland's Medical Dictionary

ENZ ENZYME EFFECT			
PPPA	Phosphoenolpyruvic acid	Also known as Phosphoenolpyruvate carboxykinase. An enzyme that catalyses the reaction of oxaloacetate and GTP to form phosphoenolpyruvic acid, CO <sub>2</sub> , and GDP; a key enzyme in gluconeogenesis; the biosynthesis of this enzyme is decreased by insulin.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PPPC	Phosphoenol pyruvate carboxylase	An enzyme with high affinity for carbon dioxide. It catalyzes irreversibly the formation of oxaloacetate from phosphoenolpyruvate and carbon dioxide. This fixation of carbon dioxide in several bacteria and some plants is the first step in the biosynthesis of glucose.	
PPSN	Pepsin	any of several enzymes of the gastric juice that catalyze the hydrolysis of proteins to form polypeptides.	<a href="http://www.mercksource.com">www.mercksource.com</a>
PROD	Pentylresorufin O-deethylase	No definition available.	
PRTA	Proteolytic activity	An enzyme that promotes proteolysis (= the splitting of proteins by hydrolysis of the peptide bonds with formation of smaller polypeptides).	
PRTS	Protease	An enzyme that digests proteins.	
PSPM	Phosphoamidase	An enzyme catalyzing the hydrolysis of phosphorus-nitrogen bonds, notably the hydrolysis of N-phosphocreatine to creatine and orthophosphate.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PXPK	Pyridoxal Phosphokinase	An enzyme that catalyzes reversibly the phosphorylation of pyridoxal in the presence of ATP with the formation of pyridoxal 5-phosphate and ADP. Pyridoxine, pyridoxamine and various derivatives can also act as acceptors. EC 2.7.1.35.	<a href="http://www.online-medical-d">www.online-medical-d</a>
PYKN	Pyruvate kinase	A phosphotransferase that catalyzes reversibly the phosphorylation of pyruvate to phosphoenolpyruvate in the presence of ATP. It has four isozymes (l, r, m1, and m2).	

ENZ ENZYME EFFECT			
PYRC	Pyruvate carboxylase	An enzyme of the ligase class that catalyzes the irreversible carboxylation of pyruvate to form oxaloacetate. The enzyme is a mitochondrial protein containing a biotin prosthetic group, requiring magnesium or manganese and acetyl CoA, and occurs in l	
QNPT	Quinolate phosphoribosyltransferase	An enzyme.	
QORD	Quinone oxidoreductase	A flavoprotein similar to NADH dehydrogenase (quinone), but oxidizing NADPH.	Biology-online.org
RBPC	Ribulose-1,5-bisphosphate carboxylase	A copper protein that catalyzes the formation of 2 moles of 3-phosphoglycerate from ribulose 1,5-biphosphate in the presence of carbon dioxide and is responsible for carbon dioxide fixation in photosynthesis.	
REHL	Retinyl Ester Hydrolase	the liver enzymes that hydrolyze retinyl esters, the form in which newly absorbed dietary vitamin A is delivered to the liver. These enzymes (retinyl ester hydrolases or REHs) are important in both the uptake of dietary vitamin A by the liver and in the mobilization of stored vitamin A from the liver when dietary input is inadequate to meet the body's need for this essential nutrient.	<a href="http://www.ars.usda.gov/research/publications/publications.htm?seq_no_115=173015">http://www.ars.usda.gov/research/publications/publications.htm?seq_no_115=173015</a>
RNIN	Renin	An enzyme of the hydrolase class that catalyses cleavage of the leucine leucine bond in angiotensin to generate angiotensin. The enzyme is synthesized as inactive prorenin in the kidney and released into the blood in the active form in response to va.	
RNPH	5'-Ribonucleotide phosphohydrolase	Common name: 5'-nucleotidase. A glycoprotein enzyme present in various organs and in many cells. The enzyme catalyses the hydrolysis of a 5'-ribonucleotide to a ribonucleoside and orthophosphate in the presence of water. It is cation-dependent and exists in a membrane-bound and soluble form.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>



ENZ ENZYME EFFECT			
RNSE	Rnase (ribonuclease)	An enzyme that catalyzes the depolymerization of ribonucleic acid.	
RUBI	Ribulose biphosphate carboxylase/oxygenase (Rubisco)	A rate regulating-enzyme in photosynthesis and a key enzyme in nitrogen metabolism.	<a href="http://www.irri.org/IRRN24-1Minireviews.pdf">http://www.irri.org/IRRN24-1Minireviews.pdf</a>
SASE	Arylsulfatase	An enzyme that cleaves phenol sulfates, including cerebroside sulfates. Some arylsulfatases are inhibited by sulfate (type II) and some are not (type I). Synonym: sulfatase.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
SBDH	Sorbitol Dehydrogenase	No definition available.	
SCDH	Succinate Dehydrogenase	No definition available.	
SFTA	Sulfotransferase	Generic term for enzymes in EC sub-subclass 2.8.2 catalyzing the transfer of a sulfate group from 3'-phosphoadenylyl sulfate (active sulfate) to the hydroxyl group of an acceptor, producing the sulfated derivative and 3'-phosphoadenosine 5'-phosphate	
SGOT	Serum Glutamate Oxalo Acetate Transaminase	No definition available.	
SGPT	Serum Glutamic Pyruvic Transaminase	No definition available.	
SODA	Super Oxide Dismutase (SOD) Enzyme Activity	No definition available.	
SPGX	Selenium dependent glutathion peroxidase	Selenium has a main role as an antioxidant in the enzyme selenium-glutathione-peroxidase.	<a href="http://www.uphs.upenn.edu/ency/article/002414.htm">http://www.uphs.upenn.edu/ency/article/002414.htm</a>
SSAR	Serum Glutamate Oxalo Acetate Transaminase and Serum Glutamic Pyruvic Transaminase to Alkaline Phosphatase ratio (SGOT & SPGT to ALPH ratio)	Ratio of Serum Glutamate Oxalo Acetate Transaminase and Serum Glutamic Pyruvic Transaminase to Alkaline Phosphatase	
SSRA	Serum Glutamate Oxalo Acetate Transaminase to Serum Glutamic Pyruvic Transaminase ratio (SGOT to SPGT ratio)	Ratio of Serum Glutamate Oxalo Acetate Transaminase to Serum Glutamic Pyruvic Transaminase.	
SUPS	Sucrose phosphate synthase	A type 2a phosphoprotein phosphatase.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

ENZ ENZYME EFFECT			
T16A	Testosterone 16-alpha hydroxylase	An enzyme that acts on testosterone at the 16-alpha position.	
T3GL	Triiodotyrosine (T3) Glucuronidation	Glucuronidation represents a major means of metabolizing hormones so that they can then be excreted. In this case triiodotyrosine (T3).	<a href="http://www.anapsid.org/cnd/hormones/glucuronidation.html">http://www.anapsid.org/cnd/hormones/glucuronidation.html</a>
T4GL	L-Thyroxine (T4) Glucuronidation	Glucuronidation represents a major means of metabolizing hormones so that they can then be excreted. In this case L-Thyroxine (T4).	<a href="http://www.anapsid.org/cnd/hormones/glucuronidation.html">http://www.anapsid.org/cnd/hormones/glucuronidation.html</a>
TAMN	Transaminase	One of a group of enzymes that catalyze the transfer of the amino group of an amino acid to a keto acid to form another amino acid. Also known as aminotransferase.	
TATS	Tyrosine aminotransferase	An enzyme that catalyses the reversible reaction of L-tyrosine and alpha-ketoglutarate producing p-hydroxyphenylpyruvate and L-glutamate; this enzyme catalyses a step in L-phenylalanine and L-tyrosine catabolism.	
TBHY	Testosterone 16 beta-hydroxylase	An enzyme that acts on testosterone at the 16-beta position.	
THMN	Thiaminase	1. An enzyme present in raw fish that destroys thiamin and may produce thiamin deficiency in animals on a diet largely composed of raw fish. 2. A hydrolase cleaving thiamin into a pyrimidine moiety (i.e., 2-methyl-4-amino-5-hydroxymethylpyrimidine) and a thiazole moiety (i.e., 4-methyl-5-(2'-hydroxyethyl)-thiazole); the pyrimidine moiety may appear in the urine as pyramin.	
THTR	Thiol Transferase	Reduces disulfide groups via thiol transfer; proposed to catalyze transfer of organomercurial from one thiol complex to another	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
TPHX	Tryptophan hydroxylase	Tryptophan hydroxylase (TPH) is the rate-limiting enzyme in the biosynthesis of serotonin and an important component of melatonin biosynthesis.	
TPOX	Tryptophan oxidase	A protohemoprotein. Forms formylkynurenine from L-tryptophan and molecular oxygen.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

ENZ ENZYME EFFECT			
T23D	Tryptophan 2,3-dioxygenase	An oxidoreductase catalyzing the reaction of L-tryptophan and O <sub>2</sub> to produce L-N-formylkynurenine; an adaptive enzyme, the level (in the liver) being controlled by adrenal hormones; a step in tryptophan catabolism; also, a step in the synthesis of NAD <sup>+</sup> from tryptophan.	cancerweb.ncl.ac.uk
TRBA	Tributyrylase	No definition available.	
TRIE	Triacetin Esterase	No definition available.	
TSHX	Tyrosine hydroxylase	Enzyme required for the synthesis of the neurotransmitters noradrenaline and dopamine.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
TSKT	Transketolase	A thiamine pyrophosphate containing enzyme that links the pentose phosphate pathway with glycolysis by converting pentoses to hexoses.	Lindqvist, Y., et. al. (1992) EMBO J. 11, 2373-2379. and <a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
TT2A	Testosterone 2-alpha hydroxylase	From mouse liver, member of the murine cytochrome p450 2d family; amino-terminal amino acid sequence given in first source Registry. Synonym: cytochrome p450 2alpha, cytochrome p-450 2alpha, androstenedione 2alpha-hydroxylase, androgen 2alpha-hydroxylase.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
TT6A	Testosterone 6-alpha hydroxylase	An enzyme that acts on testosterone at the 6-alpha position.	
TT6B	Testosterone 6-beta hydroxylase	Pcn2 is an allelic variant form (2 amino acid alterations); for cyp3a2, consider also lidocaine n-deethylase. Synonyms: cytochrome p450(6 beta), cytochrome p-450 6b-1(pb1), cyp6b1, testosterone 6beta-hydroxylase, cyt p450 6beta-3, cytochrome p450(pcn2), 6beta-a gene product, cyp3a2, cyp6b3 ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )	
TT7A	Testosterone 7alpha-hydroxylase (cyp2A1)	An enzyme that acts on testosterone at the 7-alpha position.	
TTRH	Testosterone hydroxylase	An enzyme that acts at positions 6 alpha, 7 alpha and 16 alpha of testosterone.	
TSST	Testosterone sulfotransferase	Probably an aspect of EC 2.8.2.15, steroid sulfotransferase. Synonyms: testosterone sulphotransferase, budesonide sulphotransferase	cancerweb.ncl.ac.uk

ENZ ENZYME EFFECT			
TUOX	Thiourea oxygenase	An enzyme.	
TYKN	Thymidine kinase	Of pyrimidine salvage, catalyzing phosphorylation of thymine deoxyriboside to form its 5' phosphate, the nucleotide thymidylate.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
UDGT	UDP glucuronosyltransferase	The enzymatic addition of sugars to fat-soluble chemicals is an important process that increases their solubility in water and aids in their excretion. In mammals, glucuronic acid is the main sugar that is used to prevent the accumulation of waste products of metabolism and fat-soluble chemicals from the environment to toxic levels in the body. The UDP glucuronosyltransferases that carry out this reaction are part of a super family of UDP glycosyltransferases found in animals, plants and bacteria.	<a href="http://www.unisa.edu.au/pharm_medsci/Gluc_trans/intro.htm">www.unisa.edu.au/pharm_medsci/Gluc_trans/intro.htm</a>
UDPT	Uridine Diphosphate (Udp) Glucuronyl Transferase	No definition available.	
URON	Uronolactonase	Also known as glucuronolactonase, an enzyme involve in the metabolism of L-ascorbic acid.	ECOREF 58373
URSE	Urease Activity	An enzyme that breaks urea down into carbon dioxide and ammonia, its typically used to measure urea concentrations.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
VAAM	Valine aminopeptidase	Valine, an amino acid combined with aminopeptidase which is an enzyme that removes the N terminal amino acid from a protein or peptide.	partial definition from <a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
XBME	Xenobiotic metabolizing enzymes	Enzymes that metabolize synthetic compounds not normally found in nature. Examples of xenobiotic compounds include; pesticides, herbicides, insecticides, fungicides, detergents, plastics and other synthetic polymers.	
XODA	Xanthine Oxidase	Dehydrogenases involved in conversion of hypoxanthine to xanthine and xanthine to uric acid, as the final catabolism of purines. Deficient in the human disease xanthinuria.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

HRM HORMONE EFFECT			
Measurement Code	Measurement Name	Measurement Definition	
IL1B	Interleukin-1 beta	A soluble protein (17 kD: 152 amino acids) secreted by monocytes, macrophages or accessory cells involved in the activation of both T-lymphocytes and B lymphocytes and potentiates their response to antigens or mitogens. Its biological effects include the ability to replace macrophage requirements for T-cell activation, as well as affecting a wide range of other cell types. at least two IL-1 genes are active and alpha and beta forms of IL-1 are recognized. It is released early in an immune system response by monocytes and macrophages. It stimulates T-cell proliferation and protein synthesis. Another effect of IL-1 is that it causes fever.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ILK6	Interleukin-6	A cytokine that stimulates the growth and differentiation of human B-cells and is also a growth factor for hybridomas and plasmacytomas. It is produced by many different cells including T-cells, monocytes, and fibroblasts. A single chain 25 kD cytokine originally described as a pre B-cell growth factor, now known to have effects on a number of other cells including T-cells which are also stimulated to proliferate. An inducer of acute phase proteins and a colony-stimulating factor acting on mouse bone marrow.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
11BT	11beta - hydroxytestosterone	17 beta-hydroxy-4-androsten-3-ones. Testosterone derivatives formed by the substitution of one or more hydroxyl groups in any position.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
11DC	11-Deoxycortisol	The immediate precursor of cortisol, accumulates in the peripheral circulation when there is a deficiency of adrenal 11b-hydroxylase activity.	<a href="http://www.sas-centre.org/hormones/hormpages/hormone11deoxycortisol.html">http://www.sas-centre.org/hormones/hormpages/hormone11deoxycortisol.html</a>
15BH	15 Beta-hydroxytestosterone	An oxidative product of testosterone.	ECOTOX
16AT	16alpha-Testosterone	Male sex hormone (androgen) secreted by the interstitial cells of	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

HRM HORMONE EFFECT			
		the testis of mammals and responsible for triggering the development of sperm and of many secondary sexual characteristics.	
16BH	16 beta-Hydroxytestosterone	An oxidative product of testosterone.	ECOTOX
18HC	18-Hydroxycorticosterone	A group of corticosteroids carrying hydroxy groups, usually in the 11- or 17- positions. They comprise the bulk of the corticosteroids used systemically. As they are relatively insoluble in water, salts of various esterified forms are often used for injections or solutions.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
18HD	18-Hydroxy-11-deoxycorticosterone	A potassium retaining hormone.	
19HD	19-Hydroxytestosterone	An oxidative product of testosterone.	ECOTOX
4TO3	L-thyroxine outer ring 5'-monodeiodination	The conversion of L-Thyroxine (T4) to triiodotyrosine (T3) where the T4 enters target cells where it undergoes outer ring 5'-monodeiodination to T3.	ECOREF#73485
6BTT	6beta-Testosterone	Male sex hormone (androgen) secreted by the interstitial cells of the testis of mammals and responsible for triggering the development of sperm and of many secondary sexual characteristics.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
7ATT	7alpha-Testosterone	Male sex hormone (androgen) secreted by the interstitial cells of the testis of mammals and responsible for triggering the development of sperm and of many secondary sexual characteristics.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ABSA	Absciscic Acid	A common plant hormone that inhibits plant growth	
ACTH	Adrenocorticotropic hormone	A hormone that stimulates adrenal steroid biosynthesis.	
ADDL	Androstanediol	A steroid metabolite. Also called: 5alpha-Androstane-3b,17b-diol	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ADDN	Androstenedione	An androgenic steroid produced by the testis, adrenal cortex and ovary. It occurs in nature as a 4-delta-androstenedione and 5-delta-androstenedione. Androstenediones can be converted metabolically to testosterone and	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

HRM HORMONE EFFECT			
		other androgens.	
AHPG	17 alpha-Hydroxyprogesterone	Also known as: 17 $\alpha$ -Hydroxy-4-pregnen-3,20-dione. A precursor of the androgens and adrenocortical hormones.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ALDS	Aldosterone	A steroid hormone produced by the adrenal cortex, that controls salt and water balance in the kidney. Abnormally high levels of this hormone cause sodium retention, high blood pressure, heart rhythm irregularities and possibly paralysis.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AMSH	Alpha-Melanocyte Stimulating Hormone	Alpha-Melanocyte Stimulating Hormone (alpha-MSH) is produced by an intermediate lobe of the pituitary gland. Its secretion causes a dramatic darkening of the skin.	
ANDR	Androgen	Substances that conduce masculinization; such as testicular hormones.	
ABBD	4-androstene-3 $\beta$ ,17 $\beta$ -diol	A steroid	ECOTOX
AUXN	Auxin	A plant hormone.	
BDPG	17,20 $\beta$ -Dihydroxy-4-pregnen-3-one	A female preovulatory hormone.	
<BOES> Code ESDL	beta-Oestradiol (E2)	A hormone (272 D) synthesized mainly in the ovary, but also in the placenta, testis and possibly adrenal cortex. A potent oestrogen.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CORT	Corticosterone (Corticoid)	A steroid produced by the adrenal cortex that stimulates carbohydrate synthesis and protein breakdown.	
CRCT	Cortisol and cortisone	Cortisol is a steroid hormone that is released from the zona fasciculata of the adrenal cortex in response to stress. Cortisone: Derived from cortisol and with similar physiological actions.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CRTS	Cortisol	Cortisol is a steroid hormone that is released from the zona fasciculata of the adrenal cortex in response to stress.	
CTCL	Catecholamine	A type of biogenic amine derived from tyramine, characterized as alkylamino derivatives of o-dihydroxybenzene. Catecholamines include adrenaline, noradrenaline and dopamine, with roles as	

HRM HORMONE EFFECT			
		hormones and neurotransmitters.	
CTKY	Cytokines	Cytokines are small secreted proteins which mediate and regulate immunity, inflammation, and hematopoiesis.	<a href="http://microvet.arizona.edu/Courses/MIC419/Tutorials/cytokines.html">http://microvet.arizona.edu/Courses/MIC419/Tutorials/cytokines.html</a>
CYTK	Cytokinin	Class of plant hormones that induce cell division	
DECL	11-Deoxycortisol glucuronide	11-Deoxycortisol is the immediate precursor of cortisol, accumulates in the peripheral circulation when there is a deficiency of adrenal 11b-hydroxylase activity. ( <a href="http://www.sas-centre.org/hormones/hormpages/hormone11deoxycortisol.html">http://www.sas-centre.org/hormones/hormpages/hormone11deoxycortisol.html</a> ) Glucuronide is a substance produced by attaching glucuronic acid to another substance with glycosidic bonds	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
DHTR	Dihydrotestosterone	The synthetic form is stanolone. (5alpha,17beta)-17-Hydroxyandrostan-3-one	Dorland's medical dictionary
DHPT	17alpha,20beta-dihydroxyprogesterone	A maturation-inducing hormone	Pang, Y. and Ge, W., Biol Reprod. (1999) 61(4):987-992
DITS	Diiodotyrosine	One of the hormones that are combined to create T3 (triiodotyrosine), Diiodotyrosine (DIT); tyrosine is iodinated twice.	
DOCS	Deoxycorticosterone	Also known as 11-Deoxycorticosterone; 21-hydroxypregn-4-ene-3,20-dione. An adrenocortical steroid, principally a biosynthetic precursor of corticosterone and possibly aldosterone, that rarely appears in adrenocortical secretions; a potent mineralocorticoid with no appreciable glucocorticoid activity.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
DOPA	Dopamine	A monoamine formed in the body; an intermediate product in the synthesis of norepinephrine, acts as a neurotransmitter in the CNS.	
ELTR	17beta-estradiol:Testosterone ratio	The ratio of the amount of 17beta-estradiol to the amount of testosterone in an organism.	
EPIN	Epinephrine	Secreted by the adrenal medulla and acts to increase blood pressure due to the stimulation of heart action	



HRM HORMONE EFFECT			
		and constriction of blood vessels (adrenaline).	
ESDL	17-beta Estradiol	An estrogenic hormone produced by follicle cells of the ovary; provokes estrus and proliferation of the human endometrium.	
ESTR	Estrogen (oestrogen)	Any of various natural or synthetic substances possessing the biological activity of estrus-producing hormones.	
ESTO	Estrone	3-hydroxyestra-1,3,5(10)-trien-17-one. A metabolite of estradiol but possessing less biological activity.	cancerweb.ncl.ac.uk
FOSH	Follicle stimulating hormone (FSH)	One of the most important hormones involved in the natural menstrual cycle as well as in pharmacological (drug-induced) stimulation of the ovaries. It is the main hormone involved in producing mature eggs.	
G11K	Glucuronidated 11-Ketotestosterone	A metabolite of 11-Ketotestosterone	ECOTOX staff
GBDP	Glucoronidated 17,20beta-Dihydroxy-4-pregnen-3-one	A female preovulatory hormone with glucoronidate.	
GCRT	Glucocorticoid	Corticosteroid substances (drugs or hormones) that are involved in carbohydrate metabolism by promoting gluconeogenesis and the formation of glycogen at the expense of lipid and protein synthesis. They are steroid based and possess anti-inflammatory and immunosuppressive properties. Glucocorticoids are also produced normally by the adrenal cortex and provide for the response to stress.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GHRM	Hormone, General Changes in	Change in hormone concentrations.	
GIBB	Gibberellin	A plant hormone.	
GNTF	Gonadotropin	A substance that acts to stimulate the gonads.	
GRHM	Gonadotropin releasing hormone	The peptide hormone that control reproductive function. It produced and released by the hypothalamus and controls the production and release of gonadotrophins from the pituitary gland. It causes the production of luteinising hormone	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

HRM HORMONE EFFECT			
		and follicle stimulating hormone.	
GTHH	Growth hormone	A polypeptide hormone secreted by the anterior pituitary which promotes an increase in body size. Any hormone that regulates growth in plants and animals.	
INHI	Inhibin	Polypeptide hormone secreted by the hypophysis, that selectively suppresses the secretion of pituitary follicle stimulating hormone. The molecule has two subunits (14 & 18 kD) and is a product of the gene family that includes TGF. There are two forms, __A and __B, the _ subunit being shared with activin. Inhibin is now, on the basis of gene knockout experiments, considered to be a tumor suppressor, the key gene being that for inhibin.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
INSL	Insulin	A polypeptide hormone found in both vertebrates and invertebrates. Secreted by the cells of the pancreas in response to high blood sugar levels, it induces hypoglycemia. Defective secretion of insulin is the cause of diabetes mellitus. Insulin is also a mitogen, has sequence homologies with other growth factors and is a frequent addition to cell culture media for demanding cell types.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
IPTH	Immunoreactive parathyroid hormone	No definition available.	
KTST	11-Ketotestosterone	Steroid hormone produced by the testes, along with testosterone responsible for the appearance of male secondary sex characteristics.	
LUTH	Luteinizing hormone (LH)	Stimulates secretion of sex steroids from the gonads.	
MELA	Melatonin	A hormone secreted by the pineal gland. In lower vertebrates causes aggregation of pigment in melanophores and thus lightens skin.	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>
ME4T	Total 4a-Methylsterols	Sterol - steroids with long aliphatic side chains at position 17 and at least one alcoholic hydroxyl group, usually at position 3 with lipid-like solubility.	

HRM HORMONE EFFECT			
MITS	Monoiodotyrosine	One of the hormones that are combined to create T3 (triiodotyrosine), Monoiodotyrosine (MIT); tyrosine becomes iodinated.	
NORD	Noradrenaline	Catecholamine neurohormone, the neurotransmitter of most of the sympathetic nervous system (of so called adrenergic neurons): binds more strongly to adrenergic receptors. Stored and released from chromaffin cells of the adrenal medulla.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NORE	Norepinephrine	Secreted by chromaffin cells of the adrenal medulla; acts as a vasoconstrictor and mediates transmission of sympathetic nerve impulses.	
PRGN	Pregnenolone	An unsaturated hydroxy steroid ketone C <sub>21</sub> H <sub>32</sub> O <sub>2</sub> that is formed by the oxidation of steroids (as cholesterol) and yields progesterone on dehydrogenation.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
PRLC	Prolactin	A protein hormone produced by the adenohypophysis; stimulates lactation and promotes functional activity of the corpus luteum.	
PRGS	Progesterone	A steroid produced in the corpus luteum, placenta, testes, and adrenals; plays an important physiological role in the luteal phase of the menstrual cycle and in the maintenance of pregnancy.	
S11K	Sulfated 11-Ketotestosterone	A metabolite of 11-Ketotestosterone	ECOTOX staff
SBDP	Sulfated 17,20-beta-Dihydroxy-4-pregnen-3-one	Metabolite of 17,20-beta-Dihydroxy-4-pregnen-3-one	ECOTOX Staff
SMTc	Somatomedin C (or IGF-1)	Somatotropin or human growth hormone is secreted by the pituitary gland under the influence of growth hormone releasing hormone. IGF-I is the main effector of growth hormone activity. <sup>3</sup> IGF-I or Somatomedin C is the major member of a family of proteins synthesized by the liver in response to growth hormone stimulus. It circulates in the peripheral blood bound on a tertiary complex with IGFBP-3 and acid labile subunit	<a href="http://www.aal.xohost.com/IGF-1.htm">http://www.aal.xohost.com/IGF-1.htm</a>

HRM HORMONE EFFECT			
		(ALS)	
SRIF	Somatostatin	A polypeptide hormone that is produced by the hypothalamus and inhibits the release of growth hormone by the anterior pituitary. It is also produced in the delta cells of the endocrine pancreas where it inhibits the secretion of insulin and glucagon and decreases intestinal motility and absorption.	<a href="http://www.harcourt.com/dictionary">www.harcourt.com/dictionary</a>
SRTN	Serotonin	A vasoconstrictor, serves as a central neurotransmitter, also called 5-Hydroxytryptamine.	
ST5T	Total (Delta)5-sterols	Sterol - steroids with long aliphatic side chains at position 17 and at least one alcoholic hydroxyl group, usually at position 3 with lipid-like solubility.	
ST8T	Total (Delta)8-sterols	Sterol - steroids with long aliphatic side chains at position 17 and at least one alcoholic hydroxyl group, usually at position 3 with lipid-like solubility.	
STRD	Steroids	A group name for lipids that contain a hydrogenated cyclopentanoperhydrophenanthrene ring system. Some of the substances included in this group are progesterone, adrenocortical hormones, the gonadal hormones, cardiac aglycones, bile acids, sterols (such as cholesterol), toad poisons, saponins and some of the carcinogenic hydrocarbons.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
STST	Sulfated Testosterone	A metabolite of Testosterone	
T3T4	Triiodothyronine (T3) to thyroxine (T4)	The ratio of Triiodothyronine (T3) to Thyroxine (T4).	
T4T3	Thyroxine:Triiodothyronine	The ratio of Thyroxine (T4) and Triiodothyronine (T3).	
TGLD	Testosterone glucuronide	A metabolite of testosterone. Testosterone glucuronide comes from the hepatic transformation of testosterone, DHT and androstenedione.	<a href="http://www.estetik.com/datamed/Anti_Aging/male_hormones.htm">http://www.estetik.com/datamed/Anti_Aging/male_hormones.htm</a>
THYR	Thyroxine	(T4) an iodine-containing hormone C <sub>15</sub> H <sub>11</sub> I <sub>4</sub> NO <sub>4</sub> that is an amino acid produced by the thyroid gland as a product of the cleavage of thyroglobulin, increases metabolic	

HRM HORMONE EFFECT			
		rate.	
TRII	Triiodothyronine	(T3) an iodine-containing hormone C <sub>15</sub> H <sub>12</sub> I <sub>3</sub> NO <sub>4</sub> that is an amino acid derived from thyroxine , the more active form of thyroid hormone which crosses cell membranes to exert an effect on metabolic rates within an organism.	
TSHT	Thyrotropin	Thyrotropin or thyroid-stimulating hormone (TSH), is a hormone released by the anterior pituitary gland that stimulates the thyroid gland to release thyroxine.	
TSTR	Testosterone	A steroid hormone which is necessary for male sexual reproduction and may also play a role in female sexual response. It is responsible for such male secondary sexual characteristics as body hair. In males, is produced in the Leydig cells of the testes; in both sexes, it is produced in smaller quantities by the adrenal glands.	

**GRO GROWTH GROUP**

DVP DEVELOPMENT EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
68CL	6-8 Cell stage	Cleavage stage during embryonic development which contains 6-8 cells.	
AAFR	Age at first reproduction	The age when an organism starts to reproduce. A life table parameter	(ECOTOX Staff)

DVP DEVELOPMENT EFFECT			
ABNM	Abnormal	Effects which occur to the organism that has been directly exposed (compare to teratogenic effects). Effects included under this measurement include nonspecific physical malformations, deformities, defects, discoloration, anomalies, vegetative vigor, etc.	ECOTOX makes every effort to code the specific abnormalities (e.g. imposex, limb deformities, lesions, etc.), but when an author does not clearly state the specific type of abnormality or combines multiple types of abnormalities into one data point DVP ABNM is used.
BSCY	Blastocyst stage	An early metazoan embryo typically having the form of a hollow fluid-filled rounded cavity bounded by a single layer of cells	
CCLV	Cell Cleavage	No definition available.	
COAT	Coat development	Development of primary coat.	ECOTOX
COLR	Color	No definition available.	
DFRM	Deformation/ Malformations	A physical blemish or distortion	
DVLP	Slowed, Retarded, Delayed or Non- development	No definition available.	
EARO	Ear opening	The development stage when the ears open	ECOTOX
EARP	Ear pinna detachment	The detachment of the ear pinna	
EMRG	Emergence	Change in the emergence from larval stage into the adult stage. Also includes plant emergence.	
ENDD	Endoderm Differentiation	No definition available.	
EVFO	Envelope Formation	No definition available.	
EYOP	Eye opening	The development stage when the eyes open.	
FIRM	Firmness	No definition available.	
FLDG	Fledged/Female or /Brood	No definition available.	
FORM	Organ/Tissue Formation	No definition available.	
FURR	Fur Development	Development of fur.	

DVP DEVELOPMENT EFFECT			
GDVP	Development, General	Change in ability to grow to a more mature life stage and in time between separate life stages.	Used when more than one measurement is coded for an AQUIRE record.
GRRT	Growth Rate	No definition available.	
GSTL	Gastrulation	During embryonic development of most animals a complex and co-ordinated series of cellular movements occurs at the end of cleavage. The details of these movements, gastrulation, vary from species to species, but usually result in the formation of the three primary germ layers, ectoderm, mesoderm and endoderm.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
INCT	Incubation time	To maintain (as an embryo or a chemically active system) under conditions favorable for hatching, development, or reaction.	Webster's
LRCF	Loricae formation	Tintinnid ciliates form stiff, vase-shaped or barrel-shaped coverings called loricae, around themselves.	
MATR	Maturation	The process of coming to full development.	
MMPH	Metamorphosis	A marked structural change in an animal during postembryonic development.	
MOLT	Molting	To shed an outer covering as part of periodic process of growth.	
MRLA	Morula stage	A globular solid mass of blastomeres formed by cleavage of a zygote that typically precedes the blastula.	
NORM	Normal	No definition available.	
PHRN	Post Harvest Character No Effect	No definition available.	
PHRV	Post Harvest Character Influenced	No definition available.	
PUPA	Pupation	Change in percent pupation or pupation duration.	
RSPN	Resorption (Tail Resorption in Frogs)	No definition available.	

<b>DVP DEVELOPMENT EFFECT</b>			
STGE	Stage of development	A period or step in a progress, activity, or development; especially : one of the distinguishable periods of growth and development of a plant or animal.	<a href="http://www.m-w.com">http://www.m-w.com</a>
SXDP	Sexual Development	No definition available.	
TEMR	Time to First Emergence	No definition available.	
TERA	Teratogenesis	The origin or mode of production of a malformed foetus; the disturbed growth processes involved in the production of a malformed neonate.	Use this code when exposure of adults results in quantifiable occurrence of abnormal offspring.
TFLW	Time to Flower	No definition available.	
THED	Time to heading	The time it take for grain to reach maturity.	
TRRA	Transformation Ratio	(Weight of Roots + Sprouts/weight of Original Seed)	
WEAN	Weaned	Permanent deprivation of breast milk and commencement of nourishment with other food.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
WGHT	Weight	The heaviness of an object.	
YLKA	Yolk sac absorption, Yolk sac utilization	A bag-like ventral extension of the gut containing nutritive materials that first appears in the fish embryo and is later absorbed by the larva during the stage after hatching and before feeding.	<a href="http://filaman.uni-kiel.de/LarvalBase/Glossary">filaman.uni-kiel.de/LarvalBase/Glossary</a>

<b>GRO GROWTH EFFECT</b>			
Measurement Code	Measurement Name	Measurement Definition	Notes
<ABNM>	Abnormal	Effects which occur to the organism that has been directly exposed (compare to teratogenic effects). Effects included under this measurement include nonspecific physical malformations, deformities, defects, discoloration, anomalies, vegetative vigor, etc.	DO not code GRO ABNM. ABNM should be coded under MPH (when adult body structures are changing) or DVP (when embryo or juveniles are becoming abnormal throughout different lifestages)
AREA	Area	Change in area of an entire organism.	(Use AREA MPH (Morphology) when measuring specific response sites.



<b>GRO GROWTH EFFECT</b>			
BMAS	Biomass	Includes harvest yield, fruit or seed yield, mass of population, standing crop, productivity.	
<BDBN>	Body Burden	No definition available.	This will need maintenance. If the measurement occurs with an endpoint than the measurement should change to EBCN.
CRCM	Circumference	The outer boundary, especially of a circular area.	cancerweb.ncl.ac.uk
COND	Condition Index or Condition Factor	Fitness factor. Condition factor (K) is measured by $K = \text{wt}/\text{length}^3 \times 100$ .	Condition Factor ECOREF#61168
DNSY	Density	No definition available.	
DMTR	Diameter	No definition available.	
DIST	Distance grown	No definition available.	
DWGT	Dry Weight (AQUIRE Only)	Measurable change in dry weight of test organism.	
EBCN	Effective Body Concentration	The body residue of a chemical that is associated with an effect.	
GAIN	Weight gain	Increase in body weight over existing weight.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GGRO	Growth, General	Used when more than one measurement is coded for an AQUIRE record.	
<GGRT>	Growth Rate Index	No definition available.	
GREI	Growth Efficiency Index	No definition available.	
HGHT	Height	Measurable change in height of test organism.	
LGTH	Length	Measurable change in length of test organism.	
LINT	Lint	A fibrous coat of thick convoluted hairs borne by cotton seeds that yields the cotton staple.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
NGAN	Net gain	Net weight gain (total weight gain - placental and fetal weight)	
NLEF	Number of leaves	Number of leaves found on a plant.	
NNOD	Dry Mass/Plant Roots Not Nodulated	No definition available.	
NODE	# Nodules/ nodulated Plant Roots	No definition available.	
NROT	Number of roots	Number of roots	ECOTOX

<b>GRO GROWTH EFFECT</b>			
PMTR	Perimeter	No definition available.	
RADI	Radius	A line segment extending from the center of a circle or sphere to the circumference or bounding surface.	
RGNR	Limb/ Body Part Regeneration	Change in ability to regenerate a body part, byssus production.	
RLGR	Relative Growth Rate	The size increase per unit interval of time.	
SIZE	Size	The physical magnitude, extent, or bulk : relative or proportionate dimensions.	
SPGR	Specific Growth Rate	Individual growth measurement calculated by using the net weight divided by time, also relative growth rate.	
STNT	Stunting	To hinder from growing to the natural size; to prevent the growth of; to stint, to dwarf; as, to stunt a child; to stunt a plant.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
THIK	Thickness	Having or being of relatively great depth or extent from one surface to its opposite	
THRV	Time to harvest	No definition available.	
WDTH	Width	Measurable change in width of test organism.	
WGHT	Weight	Measurable change in weight of test organism.	
WWGT	Wet Weight (AQUIRE Only)	Measurable change in the wet weight of an organism.	
VGOR	Vigor	Usually a combination of growth and injury effects.	
VOLU	Volume	The amount of space occupied by a three-dimensional object as measured in cubic units (as quarts or liters) : cubic capacity	

<b>MPH MORPHOLOGY EFFECT</b>			
Measurement Code	Measurement Name	Measurement Definition	Notes
ABDS	Apex to Base Distance	No definitions available.	
ABNM	Abnormal	Effects which occur to the organism that has been directly exposed (compare to teratogenic effects).	Use this effect-measurement combination when

<b>MPH MORPHOLOGY EFFECT</b>			
		Effects included under this measurement include nonspecific physical malformations, deformities, defects, discoloration, anomalies, vegetative vigor, etc.	adult body structures are becoming abnormal.
ABST	Absence, absent	Not present.	
AREA	Area	Area of an organ or response site.	
BVSL	Blood vessels	Any of the tubular vessels conveying the blood (arteries, arterioles, capillaries, venules, and veins).	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CAWT	Calcium weight	The ratio of calcium in the bone to the weight of the bone. A measure of bone density.	
COSC	Caudal Ossification Center	No definition available.	
CRCM	Circumference	The outer boundary, especially of a circular area.	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>
CTTK	Ratio of cortical thickness to diameter	The ratio of cortical thickness to the diameter.	
DEPO	Shell Deposition	Change in the ability to grow a shell.	
DMTR	Diameter	The diameter of an organ or tissue	
FSSR	Fissure	Any cleft or groove, normal or otherwise, especially a deep fold in the cerebral cortex which involves the entire thickness of the brain wall.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GMPH	General Morphological Changes	Used when more than one measurement is coded for an ACQUIRE record.	
HGHT	Height	Measurable change in height of test organism.	(existing SOP definition)
IMPS	Imposex, Intersex Conditions	Simultaneous presence of both male and female reproductive organs	<a href="http://epa.gov/endocrine/Pubs/ankley.pdf">http://epa.gov/endocrine/Pubs/ankley.pdf</a>
IPOS	Inter-parietal Ossification	The formation of bone or of a bony substance, the conversion of fibrous tissue or of cartilage into bone or a bony substance between the parietal bones or cartilages.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LFLV	Lens focal length variability	Measure of the sharpness of focus	ECOREF#57008
LGTH	Length	Measurable change in length of a response site.	ECOTOX staff
MOSC	Metacarpal Ossification	No definition available.	

MPH MORPHOLOGY EFFECT			
	Center		
MSSG	Missing, absent	A tissue/organ not developed or missing from a body.	
NLRG	Enlargement	To increase in size.	
NORM	Normal	Conforming to a type, standard, or regular pattern.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
OSSC	Ossification center	An area where the formation of bone or of a bony substance, the conversion of fibrous tissue or of cartilage into bone or a bony substance occurs.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PULP	Pulp	The soft succulent portion of a fruit.	McGraw-Hill, 1994
POSC	Parietal Ossification	The formation of bone or of a bony substance, the conversion of fibrous tissue or of cartilage into bone or a bony substance located near the parietal bone	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
RADI	Radius	A line segment extending from the center of a circle or sphere to the circumference or bounding surface.	from SOP
RATO	Ratio	Ratio of the size of body parts.	
RIBS	Number of ribs	Amount of rib bones present.	
SFRB	Supernumerary full rib	A full rib that exceed the expected number of ribs.	
SHPE	Change in Shape	No definition available.	
SIZE	Size	The size of an organ or tissue.	
SMIX	Somatic Index	Organ Weight in Relationship to Body Weight.	
SMTE	Somite	Segmentally arranged blocks of mesoderm lying on either side of the notochord and neural tube during development of the vertebrate embryo.	
SOSC	Sternal Ossification Center	No definition available.	
SRIB	Supernumerary Ribs	No definition available.	
SSRB	Short supernumerary rib	A partial rib that exceed the expected number of ribs.	
STBD	Seminiferous tubule diameter	The diameter of any of the coiled threadlike tubules that make up the bulk of the testis and are lined with a layer of epithelial cells from which the spermatozoa are produced.	
STRC	Structural Changes	No definition available.	

<b>MPH MORPHOLOGY EFFECT</b>			
STTO	Strength and Tone	No definition available.	
SVTE	Supernumerary vertebrae	Having more than the expected number of vertebrae.	
THIK	Thickness	Having or being of relatively great depth or extent from one surface to its opposite.	
TKWD	Thickness:width	Ratio of thickness to width.	
VOLU	Volume	The amount of space occupied by a three-dimensional object as measured in cubic units (as quarts or liters) : cubic capacity.	
WEAR	Wearing	To cause to deteriorate by use. To impair or diminish by use or attrition. To consume or waste gradually.	www.m-w.com
WGHT	Weight	The heaviness of an object.	
WDTH	Width	Wideness; the distance from one side of an object or area to the other.	http://cancerweb.ncl.ac.uk/omd/

**CEL CELLULAR GROUP**

<b>CEL CELLULAR EFFECT</b>			
Measurement Code	Measurement Name	Measurement Definition	Notes
AGGR	Aggregation/ Adhesion	No definition available.	
AHRC	Aryl Hydrocarbon Receptor	The Aryl hydrocarbon receptor (AhR) is member of the family of basic-helix-loop-helix transcription factors. AhR is a cytosolic transcription factor that is normally inactive, bound to several co-chaperones. Upon ligand binding to chemicals such as 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), the chaperones dissociate resulting in AhR translocating into the nucleus and dimerizing with ARNT (AhR nuclear translocator), leading to changes in gene transcription	wikipedia
AREA	Area of the cell or cell mass	Area of the cell or cell mass.	
ARGY	Argyrophilic cells	An enteroendocrine cell.	

CEL CELLULAR EFFECT			
BASO	Basophil	A structure, cell or other histologic element staining readily with basic dyes; a granular leukocyte with an irregular shaped, relatively pale-staining nucleus that is partially constricted into 2 lobes; also called basophilic leukocytes; a beta cell of the adenohypophysis - see also gonadotroph and thyrotroph	
BCEL	B-cell	A type of lymphocyte normally involved in the production of antibodies to combat infection. It is a precursor to a plasma cell. During infections, individual B-cell clones multiply and are transformed into plasma cells, which produce large amounts of antibodies against a particular antigen on a foreign microbe. This transformation occurs through interaction with the appropriate CD4 T helper cells.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
BPCL	Bipolar Cell	A class of retinal interneurons, named after their morphology, that receive input from the photoreceptors and send it to the ganglion cells.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
BWDD	Blood-water diffusion distance	The distance between the lamellar epithelium to the nearest erythrocytic surface	ECOREF 16098
CCHG	Cell Changes	Cytology, change in organelle structure, cell size or cell volume. Used when more than one measurement is coded for an ACQUIRE record.	(do not use GRO), phagocytosis. For algae, use for change in optical density, location of pigments, cell shape, size. Another example of where it might be appropriate to initiate use of a morph code.
CDRT	Cell division rate	Cell division = The process by which living cells multiply; may be mitotic or amitotic.	McGraw-Hill, 1994
CVIA	Cell Viability	The quality or state of being viable or alive	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>

CEL CELLULAR EFFECT			
CESR	Cytosolic Estrogen Receptor	When the cytosolic estrogen receptor binds hormone, the complex moves into the nucleus where it acts as a transcription factor, binding to estrogen responsive elements (ERE) in the DNA and thereby modulating a myriad of cellular functions.	<a href="http://www.invitrogen.com/downloads/FP4.pdf">http://www.invitrogen.com/downloads/FP4.pdf</a>
CILR	Ciliated Type II Receptors	No definition available.	
CIRC	Choline acetyltransferase (ChAT) immunoreactive cells	Cell exhibiting an immunologic reaction to Choline acetyltransferase which is an enzyme that controls the production of acetylcholine.	partial definition: <a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CLCE	Chloride Cell	No definition available.	
CMGR	Cell migration	Implies movement of a population of cells from one place to another as in movement of neural crest cells during morphogenesis	
CRCM	Circumference	The outer boundary, especially of a circular area. (cancerweb.ncl.ac.uk)	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
CTRV	Cell Turnover	No definition available.	
CYTO	Cytotoxicity	No definition available.	
DEND	Dendrite Receptors	No definition available.	
DIVC	Dividing Cells	No definition available.	
DMTR	Diameter	The diameter of a cell.	
DNSY	Density	No definition available.	
DPTH	Depth	The perpendicular measurement downward from a surface or the direct linear measurement from front to back.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
EOSN	Eosinophil	A structure, cell or histologic element readily stained by eosin, especially a granular leukocyte with a nucleus that usually has two lobes connected by chromatin.	
ERTH	Erythoroblasts	Any type of nucleated erythrocyte, also designating an immature cell from which a red corpuscle develops.	
ESRS	Estradiol receptor sites	Cytoplasmic proteins that bind estradiol, migrate to the nucleus, and regulate DNA transcription.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

CEL CELLULAR EFFECT			
FOCI	Foci	Foci = The origin or center of a disseminated disease	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GABR	gamma aminobutyric acid receptor	Ligand gated chloride ion channel forming receptor opened by gamma aminobutyric acid. Two distinct types: A and B. Also known as GABA receptor.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GBLT	Goblet Cells	A unicellular, mucus-secreting intra-epithelial gland that is distended on the free surface. Also known as Chalice cell.	
GLCL	Gland Cells	No definition available.	
GLCR	Glucocorticoid receptor	The glucocorticoid receptor (GR) or nuclear receptor subfamily 3, group C, member 1 is a ligand-activated intracytoplasmatic transcription factor that interacts with high affinity to cortisol and other glucocorticoids.	Wikipedia
GNDT	Gonadotrophs	The cells of the anterior pituitary that regulate reproduction are known as gonadotrophs and make the gonadotrophins- luteinising hormone and follicle-stimulating hormone.	<a href="http://mumus.med.monash.edu.au">mumus.med.monash.edu.au</a>
GRAN	Granulocyte	Any cell containing granules, especially a leukocyte containing neutrophil, basophil, or eosinophil granules in its cytoplasm.	
HGHT	Height	The height of a cell.	
HMPS	Hematopoiesis	The formation and development of blood cells involving both proliferation and differentiation from stem cells. In adult mammals usually occurs in bone marrow.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HTCY	Heterocyst frequency	Specialized cell type found at regular intervals along the filaments of certain Cyanobacteria, site of nitrogen fixation.	
ILDS	Interlamellar distance	The distance between lamellae	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>
LEUK	Leukocytes	White blood cell	
LGTH	Length	Measurable change in length of test organism, organ or cell	
LMFI	Lamellar fusion index	An index related to the fusion of the lamellae which is an area of the gills where exchange of gasses / waste products takes place.	partial definition <a href="http://www.aquatext.com/list-l.htm#Lamellae">http://www.aquatext.com/list-l.htm#Lamellae</a>



CEL CELLULAR EFFECT			
LMPH	Lymphocyte	Any of the mononuclear , nonphagocytic leukocytes found in the blood, lymph and lymphoid tissues.	
MONO	Monocyte	A large, agranulated leukocyte with a relatively small, eccentric, oval or kidney-shaped nucleus.	
MUCR	Muscarinic Cholinergic Receptor	No definition available.	
MYCT	Myocyte	A muscle cell	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
MYLO	Myelocyte	A motile cell produced by and found in the bone marrow which develops into granular leukocytes.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NCCM	Normochromatic cells, micronucleated	Being normal in color; referring especially to red blood cells that possess the normal quantity of hemoglobin.	
NCEL	Number/Frequency of Cells	No definition available.	
NESR	Nuclear Estrogen Receptor	Nuclear hormone receptor proteins form a class of ligand activated proteins that, when bound to specific sequences of DNA serve as on-off switches for transcription within the cell nucleus. These switches control the development and differentiation of skin, bone and behavioral centers in the brain, as well as the continual regulation of reproductive tissues.	<a href="http://www.ks.uiuc.edu/Research/pro_DNA/ster_horm_rec/">http://www.ks.uiuc.edu/Research/pro_DNA/ster_horm_rec/</a>
NEUT	Neutrophil	A large granular leukocyte with a highly variable nucleus, consisting of three to five lobes, and cytoplasmic granules which stain with neutral dyes and eosin.	
NLEI	Nuclei	The major organelle of eukaryotic cells, in which the chromosomes are separated from the cytoplasm by the nuclear envelope.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NMDR	NMDA Receptor	Glutamate receptor sub type. N methyl D aspartate receptor channels seem to be potentiated by intracellular arachidonic acid. Also known as N-methyl, D-aspartic acid or NMDA receptor.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

CEL CELLULAR EFFECT			
NRBC	Nucleated red blood cells	Nucleated red blood cells, (nrbc or normoblasts), represent the stages of a red blood cell before it matures. Cells of this stage are usually seen in newborn infants, and in patients with responses to hemolytic crises, such as in megaloblastic anemia and iron deficiency anemia. The average size of the normoblast is 7-12 $\mu$ m in diameter. The cytoplasm is pink. The nucleus is pyknotic (a homogeneous blue-black mass with no structure).	<a href="http://www.wadsworth.org/chemheme/heme/microscope/nrbc.htm">http://www.wadsworth.org/chemheme/heme/microscope/nrbc.htm</a>
NROD	Rods	Elongated cells or elements of the sensory layer of the retina, some of which are cylindrical, others somewhat conical.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
OGNL	Organelle	A specialized subcellular structure, such as a mitochondrion, having a special function.	
OSRS	Osmotic Resistance/RBC	No definition available.	
PCCM	Polychromatic cells, micronucleated	A primitive erythrocyte in bone marrow, with basophilic material as well as hemoglobin (acidophilic) in the cytoplasm. Synonym: polychromatophil cell.	
PCRC	Polychromatic cells	A primitive erythrocyte in bone marrow, with basophilic material as well as hemoglobin (acidophilic) in the cytoplasm. Synonym: polychromatophil cell.	
PGRC	Progesterone Receptor	A specific protein bound to progesterone that moves with the hormone into the nucleus and forms a transcription factor.	( <a href="http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/P/Progesterone.html">http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/P/Progesterone.html</a> )
PKNJ	Purkinje cells	Largest brain neuron involved synaptic processing.	<a href="http://www.omnimag.com/live_science/purkwrld">www.omnimag.com/live_science/purkwrld</a>
PKNS	Pyknosis	Contraction of nuclear contents to a deep staining irregular mass, sign of cell death.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PLAS	Plasmolysis	Contraction or shrinking of the protoplasm of a plant cell due to the loss of water by osmotic action.	
PMNC	Polymorphonuclear cells	Having nuclei of varied forms; denoting a variety of leukocyte.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

CEL CELLULAR EFFECT			
PRKY	Perikarya, perikaryon	Cell body surrounding nucleus of a neuron does not include axonal and dendritic processes.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
RBCE	Red Blood Cell	Erythrocyte - found in peripheral blood.	
RDCP	Relative diffusing capacity	The gas exchange area over the blood-water diffusion distance of the experiment organism divided by the gas exchange area over the blood-water diffusion distance of the experiment organism.	ECOREF 89704
RETI	Reticulocytes	A young red blood cell showing a basophilic reticulum under vital staining.	
RSBC	Receptor site, binding capacity	No definition available.	
SGDN	Signal Density	No definition available.	
SIZE	Size	The physical magnitude, extent, or bulk : relative or proportionate dimensions of a cell.	
SPLO	Splenocytes	The monocyte characteristic of the spleen.	
SRTL	Sertoli cells	Elongated cells in the tubules of the testis to which the spermatids become attached. They provide support, protection, and, apparently, nutrition until the spermatids become transformed into mature spermatozoa.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
STCL	Stippled cells	Cells that have an appearance of being engraved by means of dots and flicks.	partial definition: <a href="http://www.m-w.com/">http://www.m-w.com/</a>
STRC	Structural Changes	No definition available.	
TCEL	T-cell	A class of lymphocytes, so called because they are derived from the thymus and have been through thymic processing. Involved primarily in controlling cell-mediated immune reactions and in the control of B-cell development. The T-cells coordinate the immune system by secreting lymphokine hormones.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
TCRA	T-cell receptor ab (TCR)	No definition available.	
THRM	Thrombocytes	A blood platelet.	
TWBC	White Blood Cell Count, Total	Measure of total WBC.	

<b>CEL CELLULAR EFFECT</b>			
UBWB	White Blood Cell, Undifferentiated Blasts	Absence of normal differentiation of white blood cell blasts.	
VOLU	Volume	The amount of space occupied by a three-dimensional object as measured in cubic units (as quarts or liters) : cubic capacity.	from SOP
WBCI	White blood cell index	white blood cell count multiplied by the percentage of immature white blood cells called marrow blasts	<a href="http://patient.cancercounselants.com/leukemia_cancer_news.aspx?id=17792">http://patient.cancercounselants.com/leukemia_cancer_news.aspx?id=17792</a>
WDTH	Width of the cell	Width of the cell.	

<b>GEN GENETIC EFFECT</b>			
Measurement Code	Measurement Name	Measurement Definition	Notes
2KMR	Cyp2K mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Cyp2K.	
5RMR	5alpha-reductase 1 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to 5alpha-reductase.	ECOTOX
ACMR	beta-Actin mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins. Beta-Actin is a muscle protein that is the chief constituent of the Z-band myofilaments of each sarcomere.	
ACRD	Abnormal chromosomal distribution	Abnormal chromosomal distribution	
AHMR	Aryl Hydrocarbon Receptor protein mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Aryl Hydrocarbon Receptor protein (AhR)	ECOTOX
ALFR	Allele frequency	the frequency of any one of a series of two or more different genes that occupy the same position (locus) on a chromosome.	<a href="http://cancerweb.nci.ac.uk/omd/">http://cancerweb.nci.ac.uk/omd/</a>

<b>GEN GENETIC EFFECT</b>			
AMRN	Cytochrome P450aromB mRNA	Cytochrome P450 aromatase messenger RNA. Part of an enzyme which converts androgens to oestrogens by desaturating ring a of the steroid. mRNA (messenger RNA) is the mediating template between DNA and proteins. P450arom is a major player in estrogen signaling. Also known as Cytochrome P450 aromatase mRNA and Estrogen sythetase mRNA	
APOP	Apoptosis, Programmed Cell Death, DNA Fragmentation	Programmed cell death as signalled by the nuclei in normally functioning human and animal cells when age or state of cell health and condition dictates	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ATRN	Alpha-induced tumor necrosis factor mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to alpha-induced tumor necrosis factor	<b>ECOTOX</b>
BADF	beta-Actin cDNA fragments	cDNA is DNA that is synthesized from a messenger RNA template, the single-stranded form is often used as a probe in physical mapping to locate the gene or can be cloned in the double stranded form. In this case specific to the protein beta-actin.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
BNFM	Brain-derived neurotrophic factor mRNA	Small basic protein purified from pig brain, a member of the family of neurotrophic factors that also includes Nerve Growth Factor and neurotrophin 3. In contrast to nerve growth factor, brain-derived neurotrophic factor is predominantly (though not exclusively) localized in the CNS. It supports the survival of primary sensory neurons originating from the neural crest and ectodermal placodes that are not responsive to NGF. In the brain brain-derived neurotrophic factor has a trophic action on retinal, cholinergic, and dopaminergic neurons, and in the peripheral nervous system it acts on both motor and sensory neurons. Messenger RNA	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

GEN GENETIC EFFECT			
BRAK	Chromosomal breaks	Chromosome breakage - A type of chromosomal aberration which may result from spontaneous or induced breakage. Alkylating agents, various types of irradiation, and chemical mutagens have been found to cause induced chromosomal breakage. Breakage can induce base pair translocations, deletions, or chromatid breakage.	
C2MR	Cytochrome P4502N2 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Cytochrome P4502N2	ECOTOX
CA1M	CYP1A1 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Cyp1A1.	
CA2M	Cytochrome P-450 1A2 mRNA	A polycyclic aromatic hydrocarbon-inducible cytochrome which is of significant clinical interest due to the large number of drug interactions associated with induction and inhibition of theophylline. Caffeine is considered to be a model substrate for this enzyme. It also metabolises theophylline and antipyrine. Environmental factors including cigarette smoking, charbroiled meat, cruciferous vegetables, and a number of drugs including phenytoin, phenobarbital, and omeprazole produce increases in cyp1a2 activity. Messenger RNA.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CA3M	CYP1A3 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Cyp1A3.	
CABR	Chromosomal aberrations	Modification of the normal chromosome complement due to deletion, duplication, or rearrangement of genetic material.	
CARN	CD36 antigen mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to CD36 antigen	ECOTOX

GEN GENETIC EFFECT			
CDNA	Complementary DNA (cDNA)	cDNA. DNA that is synthesised from a messenger RNA template, the single-stranded form is often used as a probe in physical mapping to locate the gene or can be cloned in the double stranded form.	cancerweb.ncl.ac.uk
CFSM	c-fos mRNA	Retrovirus-associated DNA sequences (fos) originally isolated from the Finkel-Biskis-Jenkins (FBJ-MSV) and Finkel-Biskis-Reilly (FBR-MSV) murine sarcoma viruses. The proto-oncogene protein c-fos codes for a nuclear protein which is involved in growth-related transcriptional control. The insertion of c-fos into FBJ-MSV or FBR-MSV induces osteogenic sarcomas in mice. The human c-fos gene is located at 14q21-31 on the long arm of chromosome 14.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CGAP	Chromosomal gap	A localized area of thinning in a chromatid which may simulate a complete break.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CHDF	Choriogenin H cDNA fragments	cDNA is DNA that is synthesized from a messenger RNA template, the single-stranded form is often used as a probe in physical mapping to locate the gene or can be cloned in the double stranded form. In this case specific to the protein Choriogenin H.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CHLM	Chlorophyll Mutation/Albino Mutants	Mutation: a change in form, quality or some other characteristic; in genetics - a permanent transmissible change in the genetic material.	
CHMR	Choriogenin H mRNA	Choriogenin H is the high molecular weight liver derived precursor protein (ZI-1,2) of the inner layer subunits of the egg envelope. mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Choriogenin H.	ECOREF 64021

GEN GENETIC EFFECT			
CLDF	Choriogenin L cDNA fragments	cDNA is DNA that is synthesized from a messenger RNA template, the single-stranded form is often used as a probe in physical mapping to locate the gene or can be cloned in the double stranded form. In this case specific to the protein Choriogenin L.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CLMR	Choriogenin L mRNA	Choriogenin L is the low molecular weight liver derived precursor protein (ZI-3) of the inner layer subunits of the egg envelope. mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Choriogenin L.	ECOREF 64021
CPRN	Cytochrome P1A Messenger RNA (Cyp1A mRNA)	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Cyp1A.	
CYRN	Cyp1b1 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Cyp1b1	ECOTOX
DAMG	Damage	No definition available.	
DNAB	DNA binding	DNA binding to chemical.	
DNAC	DNA Concentration	No definition available.	
DNAD	DNA Adducts	Adducts are damaged cellular machinery when compounds bind irreversibly with DNA, proteins or other cellular components.	<a href="http://www.vetmed.ucdavis.edu">www.vetmed.ucdavis.edu</a>
DNAS	DNA Synthesis Rate	The linking together of nucleotides (as deoxyribonucleotide triphosphates) to form DNA. In vivo, most synthesis is DNA replication, but incorporation of precursors also occurs in repair. In the special case of retroviruses, DNA synthesis is directed by an RNA template (see reverse transcriptase). H3 thymidine incorporation - Thymidine, an essential DNA building block can be radioactively labeled with H3 (tritium) and used to measure DNA synthesis as a reflection of cell division.	
DNPR	DNA to protein ratio	A ratio of DNA to protein.	
DNRN	Ratio of DNA to RNA	The ratio between DNA and RNA concentrations in a sample.	



GEN GENETIC EFFECT			
DPLT	Diplotene	A stage of meiotic prophase which follows the pachytene and during which the paired homologous chromosomes begin to separate and chiasmata become visible.	Webster's
DPTR	Dopamine Transporter Expression	The dopamine transporter or DAT is a monoamine transporter that is specific for clearing the neurotransmitter dopamine out of the synaptic cleft and into a glial cell or the presynaptic neuron.	<a href="http://en.wikipedia.org/wiki/Dopamine_transporter">http://en.wikipedia.org/wiki/Dopamine_transporter</a>
DTMR	Dopamine transporter mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Dopamine transporter	ECOTOX
EIMR	Eukaryotic initiation factor 2B mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Eukaryotic initiation factor 2B	ECOTOX
EMRN	Estrogen mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins. Estrogen - Any of various natural or synthetic substances possessing the biological activity of estrus-producing hormones.	
EMRR	Estrogen receptor : Estrogen mRNA ratio	The ratio of estrogen receptor to estrogen receptor messenger RNA.	
ESRG	Estrogen receptor gene	The estrogen-activated receptor binds to its responsive element in the 5' flanking region of estrogen-responsive genes and modulates the transcription of these genes through its interactions with others transcription factors and the components of the transcription initiation complex.	ECOREF 60619
FARN	Fatty acid binding protein 5 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Fatty acid binding protein 5	ECOTOX
FSMR	Follicle stimulating hormone beta mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to follicle stimulating hormone.	
G1PN	G1 Phase Nuclei	No definition available.	

GEN GENETIC EFFECT			
G6MR	G6A11 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to G6A11	ECOTOX
GGSM	Gamma glutamylcysteine synthetase mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Gamma glutamylcysteine synthetase.	ECOTOX Staff
GVMR	gamma vitelline envelope protein mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to gamma vitelline envelope protein	ECOTOX
GDRN	Growth arrest and DNA-damage-inducible 45 beta mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Growth arrest and DNA-damage-inducible 45 beta	ECOTOX
GEXP	Gene Expression	No definition available.	
GGEN	Genetics, General	Changes in the genetic processes of cell (e.g. RNA, DNA).	
GHMR	Growth hormone mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins. Growth hormone is a polypeptide hormone secreted by the anterior pituitary which promotes an increase in body size. Any hormone that regulates growth in plants and animals.	
GLT1	Glucose transporter 1 mRNA	Glucose transporter 1 mediates glucose transport into red cells, and throughout the blood brain barrier. It is ubiquitously expressed and transport glucose in most cells. Messenger RNA.	<a href="http://www.4adi.com/flr/glutsflr.html">http://www.4adi.com/flr/glutsflr.html</a>
GLT3	Glucose transporter 3 mRNA	Glucose transporter 3 is the main transporter in neurons. Messenger RNA.	<a href="http://www.4adi.com/flr/glutsflr.html">http://www.4adi.com/flr/glutsflr.html</a>
GORN	Glutamate oxaloacetate transaminase 1 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to glutamate oxaloacetate transaminase 1	ECOTOX
GTPF	Genotype Frequencies	No definition available.	
HTZY	Heterozygosity	The presence of different alleles at one or more loci on homologous chromosomes.	

GEN GENETIC EFFECT			
HHMR	3B-Hydroxysteroid dehydrogenase mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to 3B-Hydroxysteroid dehydrogenase.	ECOTOX
LEPT	Leptotene	A stage of meiotic prophase immediately preceding synapsis in which the chromosomes appear as fine discrete threads.	
LHMR	Lutenizing hormone mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Lutenizing hormone.	
LLRN	Lipoprotein lipase mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Lipoprotein lipase	ECOTOX
LPDN	Lipid to DNA ratio	The amount of lipid as compared to the amount of DNA in a sample.	
MGRN	Magnesium superoxide dismutase mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Magnesium superoxide dismutase.	ECOTOX
M1MR	Metallothionein-I mRNA	A metallothionein isoform messenger RNA.	ECOTOX
M2MR	Metallothionein-II mRNA	A metallothionein isoform messenger RNA.	ECOTOX
ME1A	Meiotic Abnormalities, 1 <sup>st</sup> Anaphase	No definition available.	
ME1M	Meiotic Abnormalities, 1 <sup>st</sup> Metaphase	No definition available.	
MEIX	Meiotic Index	The number of round spermatids for each pachytene primary spermatocytes	<a href="http://www.biolreprod.org/cgi/content/short/biolreprod.102.010652v1">http://www.biolreprod.org/cgi/content/short/biolreprod.102.010652v1</a>
ME2A	Meiotic Abnormalities, 2 <sup>nd</sup> Anaphase	No definition available.	
ME2M	Meiotic Abnormalities, 2 <sup>nd</sup> Metaphase	No definition available.	
MEDM	Meiotic Abnormalities, Diakinesis and 1 <sup>st</sup> Metaphase	No definition available.	
MEIA	Meiotic Abnormalities, General	No definition available.	
MEIR	Meiosis Rate	No definition available.	

GEN GENETIC EFFECT			
MIAT	Mitotic Abnormalities, Ana-telophase	No definition available.	
MIBC	Mitotic Abnormalities, Binucleate Cell	No definition available.	
MIBG	Mitotic Abnormalities, Bridge	No definition available.	
MICL	Mitotic Abnormalities, Clumping	No definition available.	
MICY	Mitotic Abnormalities, Cytomixis	No definition available.	
MIES	Mitotic Abnormalities, Early Separation	No definition available.	
MIEX	Mitotic Abnormalities, Exclusion	No definition available.	
MIFR	Mitotic Abnormalities, Fragment	No definition available.	
MIIN	Mitotic Abnormalities, Interphase Cells	No definition available.	
MILG	Mitotic Abnormalities, Laggard	No definition available.	
MIMN	Mitotic Abnormalities, Micronuclei	No definition available.	
MIMT	Mitotic Abnormalities, Metaphase	No definition available.	
MINB	Mitotic Abnormalities, Nuclear Budding	No definition available.	
MINF	Mitotic Abnormalities, Nuclear Fusion	No definition available.	
MIPO	Mitotic Abnormalities, Disturbed Polarity	No definition available.	
MIPR	Mitotic Abnormalities, Prophase	No definition available.	
MISK	Mitotic Abnormalities, Stickiness	No definition available.	
MITA	Mitotic Abnormalities, General	No definition available.	
MITI	Mitotic Index (#Mitoses/Total Cells)	No definition available.	
MITR	Mitotic Rate	The proportion of cells in a tissue that are undergoing mitosis, expressed as a mitotic index or, roughly, as the number of cells in mitosis in each microscopic high-power field in tissue sections.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

GEN GENETIC EFFECT			
MRMT	Metallothionein mRNA metallothionein ratio	The ratio of metallothionein messenger RNA to metallothionein.	
MRNA	Messenger RNA	mRNA (messenger RNA) is the mediating template between DNA and proteins.	
MMRN	Metallothionein mRNA	No definition available.	
MNUC	Micronuclei Increase	No definition available.	
MTOS	Mitosis	A method of indirect division of a cell, consisting of a complex of various processes, by means of which the two daughter nuclei normally receive identical complements of the number of chromosomes characteristic of the somatic cells of the species. Mitosis, the process by which the body grows and replaces cells, is divided into four phases.	<a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a>
MUTA	Mutation	Mutation: a change in form, quality or some other characteristic; in genetics - a permanent transmissible change in the genetic material.	
NABN	Nuclear Abnormalities	No definition available.	
NCPF	Nuclear phase frequency	Number of phases that a cell goes through during cell division.	
NLMR	Nucleolin mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Nucleolin. Nucleolin = A major nucleolar protein (100 kD) that functions as a shuttle protein between nucleus and cytoplasm and is also found on the cell surface. Nucleolin binds midkine and heparin binding growth associated molecule (HB GAM).	( <a href="http://cancerweb.ncl.ac.uk/omd/">cancerweb.ncl.ac.uk/omd/</a> )
NGRN	Notch gene homolog 1 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Notch gene homolog 1	ECOTOX
P4MR	P450scc mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to P450scc.	ECOTOX

GEN GENETIC EFFECT			
PAMR	P450-17alpha mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to P450-17alpha.	ECOTOX
PACH	Pachytene	The stage of meiotic prophase that immediately follows the zygotene and that is characterized by paired chromosomes thickened and visibly divided into chromatids and by the occurrence of crossing-over.	
PARK	Parkin	Parkin encodes for a protein-ubiquitin E3 ligase. Mutations are linked to Parkinson's disease	<a href="http://www.acsu.buffalo.edu/~jianfeng/parkin-DAT.pdf">http://www.acsu.buffalo.edu/~jianfeng/parkin-DAT.pdf</a>
PCNA	PCNA Index	Proliferating cell nuclear a. (PCNA) a 36-kd nuclear acidic protein whose levels in the body correlate with the rates of DNA synthesis and cellular proliferation in transformed cells of certain tumors. Called also cyclin.	<a href="http://www.mercksource.com/pp/us/">http://www.mercksource.com/pp/us/</a>
PCRN	Phosphoenolpyruvate carboxykinase 1 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Phosphoenolpyruvate carboxykinase 1	ECOTOX
PHFQ	Phenotype frequencies	The frequency at which a phenotype is displayed. A phenotype is the total characteristics displayed by an organism under a particular set of environmental factors, regardless of the actual genotype of the organism. Results from interaction between the genotype and the environment.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PLMR	Prolactin mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins. Prolactin is a protein hormone produced by the adenohypophysis; stimulates lactation and promotes functional activity of the corpus luteum.	
POLY	Chromosomal Polyploidy	Polyploidy: the state of having more than two full sets of homologous chromosomes.	
PRDN	Protein to DNA ratio	The amount of protein as compared to the amount of DNA in a sample.	
PSMR	Pituitary specific transcription factor mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins.	

GEN GENETIC EFFECT			
RASO	Ras Oncogene mutation	A gene that causes cancer in an animal. The gene specifies the structure of an enzyme that catalyzes events that can induce cancerous growth. Ras is a protein found in chromosomes and when mutated it is permanently switched on telling the cell to grow regardless of whether the receptors on the cell surface are activated or not.	McGraw-Hill,1994
RNAC	RNA Concentration	No definition available.	
RNAS	RNA Synthesis Rate	No definition available.	
RNDN	RNA to DNA Ratio	No definition available.	
RNGT	Glutathione S-transferase mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Glutathione S-transferase.	ECOTOX
RNPR	RNA to protein ratio	A ratio of RNA to protein.	
RNRD	NAD(P)H dehydrogenase, quinone 1 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to NAD(P)H dehydrogenase, quinone 1	ECOTOX
SEXE	Sex Expression Change	No definition available.	
SRRN	Steroidogenic Acute Regulatory protein mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Steroidogenic Acute Regulatory protein	ECOTOX
TSLE	Translocation Efficiency	No definition available.	
U1MR	UGT1a1 mRNA	UGT1A1 is the only isoform that preferentially binds the substrate bilirubin.	<a href="http://www.genes-4u.comgenesg4_024.htm">http://www.genes-4u.comgenesg4_024.htm</a>
U6MR	UGT1a6 mRNA	UGT1A1 is the only isoform that preferentially binds the substrate bilirubin - wild type mutation at position 6.	<a href="http://www.genes-4u.comgenesg4_024.htm">http://www.genes-4u.comgenesg4_024.htm</a>
U7MR	UGT1a7 mRNA	UGT1A1 is the only isoform that preferentially binds the substrate bilirubin - wild type mutation at position 7.	<a href="http://www.genes-4u.comgenesg4_024.htm">http://www.genes-4u.comgenesg4_024.htm</a>
UDMR	UDP-glucuronosyltransferase Messenger RNA	UDP-glucuronosyltransferase Messenger RNA. Also known as UGT1 mRNA.	ECOTOX

GEN GENETIC EFFECT			
UGRN	UDP-glucose dehydrogenase mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to UDP-glucose dehydrogenase	ECOTOX
VMA2	Vesicular monoamine transporter isoform 2 (VMAT2)	The vesicular monoamine transporter is a transport protein located within the presynaptic cell, one of two isoforms namely VMAT2	<a href="http://en.wikipedia.org/wiki/Vesicular_monoamine_transporter">http://en.wikipedia.org/wiki/Vesicular_monoamine_transporter</a>
VDNA	Vitellogenin cDNA	cDNA is DNA that is synthesized from a messenger RNA template, the single-stranded form is often used as a probe in physical mapping to locate the gene or can be cloned in the double stranded form. In this case specific to the protein vitellogenin.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
VMRN	Vitellogenin Messenger RNA	No definition available.	
WTDN	Weight to DNA ratio	The weight of a sample as compared to the amount of DNA in a sample.	
ZRMR	Zona radiata mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins.	
ZYGO	Zygotene	The stage of meiotic prophase which immediately follows the leptotene and during which synapsis of homologous chromosomes occurs.	

HIS HISTOLOGY EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ACAP	Arterial Cuff Atrophy	Arterial - pertaining to an artery or to the arteries. Cuff - A small bandlike structure encircling a part. Atrophy - a wasting away; a diminution in the size of a cell, tissue, or organ.	Dorland's Medical Dictionary
ALYS	Autolysis	Self-digestion by body cells following somatic or organ death or ischemic injury.	
ANSK	Anisokaryosis	Inequality in the size of the nuclei of cells.	Dorland's Medical Dictionary



HIS HISTOLOGY EFFECT			
ARTS	Arteriosclerosis	A degenerative arterial disease marked by hardening and thickening of the vessel walls.	
ASCT	Ascites	Accumulation of serous fluid in the spaces between tissues and organs in the cavity of the abdomen.	Webster's.
ASLT	Alpha Islets	Alpha cell, pancreatic: A type of cell in the pancreas, within the pancreas, the alpha cells are located in areas called the islets of Langerhans. Alpha cells make and release glucagon which raises the level of glucose (sugar) in the blood.	
ATRS	Atresia	Imperforation or closure of a natural orifice or passage of the body.	
ATPH	Atrophy	Diminution in the size of a cell, tissue, or organ that was once fully developed of normal size.	
BLSS	Blue Sac Syndrome	Blue-sac syndrome is a fatal abnormality characterized by the gross edema of the yolk sac. The outward symptoms of blue-sac occur two weeks before hatching.	<a href="http://www.albion.edu/library/Isaac/IsaacSymBk%202002.pdf">http://www.albion.edu/library/Isaac/IsaacSymBk%202002.pdf</a>
BODS	Bodies	A mass of matter distinct from other masses.	Webster's
BSLT	Beta Islets	Beta cell, pancreatic: A type of cell in the pancreas. Within the pancreas, the beta cells are located in areas called the islets of Langerhans. They constitute the predominant type of cell in the islets. The beta cells are important because they make insulin. Degeneration of the beta cells is the main cause of type I (insulin-dependent) diabetes mellitus.	
CLFL	Collapsed Follicles	Follicle - A sac or pouch-like depression or cavity.	Dorland's Medical Dictionary
CLLD	Colloids	Microscopic particles between one nanometer and one micrometer in size and can be macromolecules.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CLPG	Clumping Pigment Granules	No definition available.	
CNGT	Congestion	Excessive or abnormal accumulation of blood in a part.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CRYT	Crystals	Formations of small irregular solid material often composed of calcium, uric acid and phosphate.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

HIS HISTOLOGY EFFECT			
CSTD	Cestodiasis	Tapeworm infestation, infestation with cestodes, a group of flattened and tape-like hermaphroditic worms that are intestinal parasites in humans and other animals, producing larvae that may invade body tissues.	
CSTS	Cyst	Any closed cavity or sac that is lined by epithelium often contains liquid or semi-solid material.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CTHN	Colloid thinning	Thinning of the colloid layer	
CTRT	Cataracts	A clouding of the lens of the eye or of its surrounding transparent membrane that obstructs the passage of light.	<a href="http://www.m-w.com/cgi-bin/dictionary">http://www.m-w.com/cgi-bin/dictionary</a>
CTYP	Percent Cell Type	No definition available.	
CYIN	Cytoplasmic Inclusions	A foreign substance, either liquid or solid, usually of minute size, inclosed in the mass of a the cytoplasm.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CYTM	Cytomegaly	Enlargement of both the cytoplasm and nucleus while maintaining a normal N/C ratio.	<a href="http://www.csi-net.net/suzanne/page22.htm">www.csi-net.net/suzanne/page22.htm</a>
CYTP	Cytoplasm	The organized complex of inorganic and organic substances external to the nuclear membrane of a cell and including the cytosol and membrane-bound organelles (as mitochondria or chloroplasts).	Webster's
CYVC	Cytoplasmic Vacuoles	Spaces or cavities within the cytoplasm.	
DBRS	Debris	An accumulation of fragments.	Webster's
DEGN	Degeneration	Deterioration of cellular integrity with no sign of response to injury or disease.	
DISO	Cellular Disorganization	No definition available.	
DLAT	Dilation	The process of enlargement or expansion.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
EDMA	Edema	An excessive accumulation of fluid in the cells, tissue spaces, or body cavities due to a disturbance in the fluid exchange mechanism.	
EHYP	Erythroid Hyperplasia	The abnormal multiplication or increase in the number of normal cells in normal arrangement in the erythroid.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

HIS HISTOLOGY EFFECT			
ENCP	Encephalopathy	Any degenerative disease of the brain.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ENDR	Endarteritis	Inflammation of the inner lining of an artery.	
ESPH	Esophagitis	Inflammation of the esophagus.	
EXCS	Extracellular space	Interstitial space between cells, occupied by fluid as well as amorphous and fibrous substances.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
EXPT	Exophthalmia	Abnormal protrusion of the eye from the orbit.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
FBRs	Fibrosis	A condition marked by increase of interstitial fibrous tissue.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
FUSE	Fuse, fused	To become blended or joined by or as if by melting together.	Webster's
GHIS	Histological Changes, General	Presence of physical damage or change to tissues or cells (for example, lesions, neoplasms); gross histological effects such as whole plant injury; disintegration of roots, stems or leaves; root fragmentation. For animals such effects include cell sloughing.	The specifics of the histology effect will be reported in EE_Remarks for ACQUIRE or the Result Remarks for TERRETOX. Used when more than one measurement is coded for an ECOTOX record.
GLSN	Gross Lesions	Any pathological or traumatic discontinuity of tissue or loss of function of a part.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HDPC	Hydropericardium	A noninflammatory accumulation of fluid in the pericardial sac.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HEMR	Hemorrhage	Change or presence of hemorrhaging.	
HFLX	Hyperflexion	Flexion of a limb or part beyond the normal limit. Synonym: superflexion.	
HRNA	Hernia	The protrusion of a loop or knuckle of an organ or tissue through an abnormal opening.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HYCE	Hypocellularity	No definition available.	
HYCR	Hyperchromicity	An increase in the optical density of a solution with nucleic acids in it such that it is able to absorb more ultraviolet radiation, which occurs when the double-stranded nucleic acid molecules denature into single-stranded molecules	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HYDS	Hydropic Swelling	No definition available.	

HIS HISTOLOGY EFFECT			
HYPL	Hyperplasia	Increase in cell number causing an increase in the size of a tissue or organ.	
HYPT	Hypertrophy	Increase in cell size causing an increase in the size of an organ or tissue.	
IHGT	Increased Height	Increase in height of an object such a cells or cellular components.	
IMVL	Increased Medullary Volume	Medullary - pertaining to the marrow or to any medulla. Medulla - The inmost part. A general term for the most interior portion of an organ or structure. Called also marrow.	Dorland's Medical Dictionary
ININ	Intranuclear inclusions	A foreign substance, either liquid or solid, usually of minute size, enclosed within the nucleus of a cell.	
IPDY	Increased Portal Density	Portal: Of or pertaining to a porta, especially the porta of the liver; as, the portal vein, which enters the liver at the porta, and divides into capillaries after the manner of an artery.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
IPHM	Increased Perivenous Homogeneity	Perivenous - around the vein.	Dorland's Medical Dictionary
LESI	Lesions	A structural or functional alteration due to injury or disease.	
LMLL	Lamellae, Lamella	A thin, plate-like layer, the layer between the walls of two adjacent plant cells.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LPHD	Lymphoid depletion	Loss of structure found within the lymphatic system that consists of lymphocytes within a network of fibers.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
MALN	Misalign, misaligned	Not to be in or come into precise adjustment or correct relative position.	Webster's
MAPH	Microphthalmia and anophthalmia	An unnatural smallness of the eyes, occurring as the result of disease or of imperfect development or congenital absence of all tissues of the eyes.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
MELM	Melanomacrophages	No definition available.	
MHYP	Myeloid Hyperplasia	The abnormal multiplication or increase in the number of normal cells in normal arrangement in myeloid.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

HIS HISTOLOGY EFFECT			
MYOP	Myopathy	Disorder of muscle tissue or muscles.	
NCRL	Necrotic Lesions	No definition available.	
NCRO	Necrosis	Death of a cell or group of cells as a result of injury, disease, or other pathologic state.	
NCVS	Nuclear Vesiculation	Vesiculation -the presence or formation of vesicles. Nuclear - Of or pertaining to a nucleus; as, the nuclear spindle or the nuclear fibrils of a cell; the nuclear part of a comet, etc.	Dorland's Medical Dictionary <a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NPHG	Nephrogenesis	Development or growth of the kidney.	
NPHR	Nephrosis	Degenerative or retrogressive renal lesions, distinct from inflammation (nephritis) or vascular involvement (nephrosclerosis), especially as applied to tubular lesions.	
PNCH	Parenchyma	The essential elements of an organ, used in anatomical nomenclature as a general term to designate the functional elements of an organ, as distinguished from its framework or stroma. Also known as parenchymal cells.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PRLF	Proliferation	The reproduction or multiplication of similar forms, especially of cells and morbid cysts.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PRVN	Proventriculitis	Inflammation of the glandular first portion of the stomach of birds, in which food from the crop (crop, avian) is mixed with peptic enzymes and passed to the gizzard.	
RCVL	Reduced Corticle Volume	Decrease in corticle volume.	
RFSZ	Reduced Follicle Size	Decrease in follicle size.	
RPCD	Reduced Periarteriole Lymphocyte Sheath Cell Density	As an arteriole leaves a septum and enters the interior volume of the spleen it immediately acquires a continuous coating of lymphocytes. This "sleeve" of lymphocytes is the periarteriole lymphocyte sheath, or PALS.	<a href="http://education.vetmed.vt.edu/Curriculum/VM8054/Labs/Lab13/Lab13.htm">http://education.vetmed.vt.edu/Curriculum/VM8054/Labs/Lab13/Lab13.htm</a>

<b>HIS HISTOLOGY EFFECT</b>			
SCNG	Sinus Congestion	Blockage of one or more of the four pairs of sinus passageways in the skull. Blockage may result from inflammation and swelling of the nasal tissues, obstruction by one of the small bones of the nose (deviated septum) or from secretion of mucus	<a href="http://www.healthwell.com/healthnotes/Concern/Sinus_Congestion.cfm">http://www.healthwell.com/healthnotes/Concern/Sinus_Congestion.cfm</a>
SHMT	Sinus Haematopoiesis	The formation and development of blood cells involving both proliferation and differentiation from stem cells in the sinus.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
SHYP	Sinus Hyperplasia	The abnormal multiplication or increase in the number of normal cells in normal arrangement in the sinus.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
SMLN	Severe misalignment	Not to be in or come into precise adjustment or correct relative position.	Webster's
SMMN	Slight to moderate misalignment	Not to be in or come into precise adjustment or correct relative position.	Webster's
SNAP	Synapses	The point at which a nervous impulse passes from one neuron to another.	Webster's
SOSS	Surpernumerary ossification	Beyond the normal number of ossifications.	
SWEL	Swelling, Swollen	No definition available.	
TFLR	Tissue Damage Measured by Fluorescence under Dyes or in Uv Light	No definition available.	
USTR	Ultrastructural Changes	No definition available.	
VCLZ	Vacuolization	The process of forming vacuoles; the condition of being vacuolated.	
XCPH	Exencephaly	Condition in which the skull is defective with the brain exposed or extruding. Synonym: exencephalia.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

**MOR MORTALITY OR SURVIVORSHIP GROUP**
**MOR MORTALITY EFFECT**

<b>MOR MORTALITY EFFECT</b>			
<b>Measurement Code</b>	<b>Measurement Name</b>	<b>Measurement Definition</b>	<b>Notes</b>
BDAY	Bird days	This is a measure of survivorship. Bird days is equal to the number of birds alive on day X * X days.	ECOREF 36364
DLMT	Dominant lethal mutations	(1-live embryos per test female/live embryos per control female) X 100.	
DTTM	Death with tumors	Mortalities that occurred with tumors.	
EBCN	Effective Body Concentration	The body residue of a chemical that is associated with an effect.	
GMOR	Mortality/Survival, General	Used when more than one measurement is coded for an ACQUIRE record.	(General mortality is a place holder for ACQUIRE transfers)
HTCH	Hatch	Change in percent hatch, time to hatch or number of eggs hatched.	
LBCN	Lethal Body Concentration	Also Lethal Body Burden. The body residue of a chemical that is associated with mortality.	<i>Use this effect-measurement pair if the author reports an endpoint based on lethal body burden or lethal body concentration (internal chemical concentrations).</i>
LIFE	Life Expectancy	Longevity, the average length of life of individuals in a population.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LFSP	Lifespan or longevity	The normal or average duration of life of members of a given species.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
MDTH	Mean Time of Death	No definition available.	
MORT	Mortality	Effect expressed as % death or % survival. A lethal effect may describe mortality (MOR) or an observed behavior that indicates mortality (e.g., shell valve closures for bivalves (SVC), immobilization (IMM) for invertebrates, or detachment (DET) for sessile organisms). "MOR" differs from "ABD" in that an initial number of organisms is known for the mortality effect and results are expressed in terms of the initial number (e.g., percent survival).	If the author defines criteria used to determine that the organism was dead, and then identifies the effect as a lethal effect, "MOR" will be coded in the EFFECT field. MOR may be coded as an effect with either LC, EC, LD, NOEC, or LOEC endpoints.

<b>MOR MORTALITY EFFECT</b>			
PSUR	Probability of Survival	Survival probability, $g(x)$ , describes the probability of survival from age $x$ to age $x+1$ , given that an individual has already survived to age $x$ . To calculate $g(x)$ , divide the survivorship schedule at age $x+1:l(x+1)$ by the survivorship schedule at age $x$ .	
SURV	Survival	No definition available.	
SVVS	Survivorship	Number alive at beginning of an age class from original cohort	
TDTH	Time to Death	No definition available.	
TKNO	Knockdown	No definition available.	
TLET	Time to 100% Mortality	No definition available.	

## PHY PHYSIOLOGICAL GROUP

<b>IMM IMMUNITY EFFECT</b>			
Measurement Code	Measurement Name	Measurement Definition	Notes
ABDT	Antibody Titres	Measure of the amount of antibody present, usually given in units per millilitre of serum.	<a href="http://www.pestmanagement.co.uk/lib/glossary/glossary_a.shtml">http://www.pestmanagement.co.uk/lib/glossary/glossary_a.shtml</a>
ABSC	Abscess	A localized pus-forming (suppurative) bacterial infection.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ASHG	Anti-sheep Red Blood Cell Hemagglutinin	No definition available.	
DHYP	Delayed Type Hypersensitivity	No definition available.	
GIMM	Immunity, General	Used when more than one measurement is coded for an ACQUIRE record.	
HEAL	Healing	To make sound or whole [heal a wound]	
HMRL	Humoral immunity	Immune responses moderated by antibodies.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HTPL	Heterophiles	An antibody raised against an antigen from one species that also reacts against antigens from other species.	
IFCT	Infected	Contaminated with a disease-producing substance or agent.	Webster's



IMM IMMUNITY EFFECT			
IGMG	Immunoglobulin G	The classical immunoglobulin class also called 7S IgG (150 kD). Composed of two identical light and two identical heavy chains, the constant region sequence of the heavy chains being of the type. The molecule can be described in another way as being composed of two Fab and an Fc fragment.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
IGMM	Immunoglobulin M	An immunoglobulin M molecule (970 kD) is built up from five immunoglobulin G type monomers joined together, with the assistance of J chains, to form a cyclic pentamer. Immunoglobulin M binds complement and a single molecule bound to a cell surface can lyse that cell. Immunoglobulin M is usually produced first in an immune response before immunoglobulin G.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
INTS	Intussusception	Intussusception refers to a telescoping of one portion of the intestine into another. This results in reduced blood supply to the affected portion of the intestine.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LKMA	Leukemia	An acute or chronic disease of unknown cause in man and other warm blooded animals that involves the blood forming organs, is characterized by an abnormal increase in the number of leucocytes in the tissues of the body with or without a corresponding	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LYPA	Lymphoma	Malignant tumor of lymphoblasts derived from B lymphocytes.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LYMP	Lymphocyte Activity	No definition available.	

IMM IMMUNITY EFFECT			
MCPG	Macrophage activity	Relatively long lived phagocytic cell of mammalian tissues, derived from blood monocyte. Macrophages from different sites have distinctly different properties. In response to foreign materials they may become stimulated or activated. Macrophages play an important role in killing of some bacteria, protozoa and tumor cells. They release substances that stimulate other cells of the immune system and are involved in antigen presentation.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
MPHG	Microphage Function, Activity	No definition available.	
MYEL	Myelosis	A condition characterized by abnormal proliferation of tissue or cellular elements.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NKCA	Natural Killer Cell Activity	No definition available.	
PARA	Amount or Percent Organisms Infested with Parasites	No definition available.	
PFCR	Plaque forming cell response	Plaque forming cell - An antibody-producing cell detected in vitro by its ability to lyse antigen-sensitized erythrocytes in the presence of complement.	<a href="http://www.fleshandbones.com/immunology/roitt/glossary.cfm?letter=P">http://www.fleshandbones.com/immunology/roitt/glossary.cfm?letter=P</a>
PHAG	Phagocytosis	A specialized form of macropinocytosis in which cells engulf large solid objects such as bacteria and deliver the internalized objects to special digesting vacuoles.	
PNMA	Pneumonia	Inflammation of the lungs with consolidation.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PRNF	Parasitic Infection	No definition available.	
PRTU	Proteuria	The presence of an excess of serum proteins in the urine; called also albuminuria (also known as proteinuria).	Dorland's Medical Dictionary
RBST	Respiratory Burst activity	Respiratory activity of cell measured as an immune response; production of extra- and intra-cellular radicals	ECOREF 80857

IMM IMMUNITY EFFECT			
RSTT	Rosette Response, Rosette Forming Cell Concentration	No definition available.	
THYM	Thymocyte Activity	Lymphocyte within the thymus, term usually applied to an immature lymphocyte.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

INJ INJURY EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ABSN	Abrasion	A superficial injury to the skin or other body tissue caused by rubbing or scraping resulting in an area of body surface denuded of skin or mucous membrane.	
ADNM	Adenoma	A benign epithelial tumor in which the cells form recognizable glandular structures or in which the cells are clearly derived from glandular epithelium.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AMLD	Amyloidosis	Deposition of amyloid. A common complication of several diseases (leprosy, tuberculosis), often associated with perturbation of the immune system, although there may be immunosuppression or enhancement.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AUTO	Autotomy	Constriction and/or loss of segments. The act of casting off a body part as a means of escape.	ECOREF 47717 <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a>
BTMR	Benign tumor	A nonmalignant clone of neoplastic cells that does not invade locally or spread to other parts of the body (metastasize), having lost growth control but not positional control. Usually surrounded by a fibrous capsule of compressed tissue.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CLFT	Cleft palate	A congenital fissure in the roof of the mouth forming a communication between the nasal passages and the oral cavity.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CLRS	Chlorosis	A form of macrocytic anemia in young females characterized by marked reduction in hemoglobin and a greenish skin color. A disease condition of green plants	

INJ INJURY EFFECT			
		seen as yellowing of green parts of the plant.	
CURV	Curvature	No definition available.	
DAMG	Damage	No definition available.	
DESI	Desiccation	The permanent decrease or disappearance of water.	
GINJ	Injury, General	Used when more than one measurement is coded for an ACQUIRE record.	
IFLM	Inflammation	A localized protective response elicited by injury or destruction of tissues, which serves to destroy, dilute or wall off (sequester) both the injurious agent and the injured tissue.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
MTMR	Malignant tumor	A tumor that tends to become progressively worse and to result in death. Having the properties of anaplasia, invasion and metastasis.	
MUTI	Mutigenesis	The occurrence or induction of mutation.	
PLYP	Polyp	A projecting mass of swollen and hypertrophied or tumorous membrane.	
SYMP	Symptom Severity Index	No definition available.	
THMB	Thrombosis	Aggregations of blood factors, primary platelets and fibrin with entrapment of cellular elements, frequently causing vascular obstruction at the point of its formation.	
TUMR	Tumor Induction	No definition available.	
ULCR	Ulcer	A local defect or excavation, of the surface of an organ or tissue, which is produced by the sloughing of inflammatory necrotic tissue.	
VASC	Vascular Disruption	No definition available.	
WART	Papilloma, wart	Wart, benign tumor of the epithelium.	

## ITX INTOXIFICATION EFFECT

ITX INTOXIFICATION EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ANOR	Anorexia	Loss of appetite.	
ATAX	Ataxia	Lack of muscular coordination due to any of several nervous system diseases.	
CONV	Convulsions	An episode of involuntary, generally violent muscular contractions.	
GITX	Intoxication, General	Used when more than one measurement is coded for an ACQUIRE record.	
IMBL	Immobile	Change in the failure to respond or lack of movement after mechanical stimulation.	
INCO	Incoordination	No definition available.	
MBLT	Mobility	No definition available.	
PARL	Paralysis	Complete or partial loss of motor or sensory function.	
TINT	Time to Signs of Intoxication	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ABSC	Abscission	A physiological process promoted by abscisic acid whereby plants shed a part, such as a leaf, flower, seed, or fruit.	
ADTH	Auditory Threshold	The audibility limit of discriminating sound intensity and pitch.	<a href="http://fred.hmc.psu.edu/ds/retrieve/fred/meshdescriptor/D001309">http://fred.hmc.psu.edu/ds/retrieve/fred/meshdescriptor/D001309</a>
APCT	Aerobic Protein Catabolism	No definition available.	
ADPE	Adsorption Efficiency	No definition available.	
ADPO	Oxidative Phosphorylation	Conversion of inorganic phosphate to the energy-rich phosphate of adenosinetriphosphatase by reactions associated with the electron transfer system.	
AECG	Abnormal ECG	Electrocardiogram (ECG / EKG) is an electrical recording of the heart.	

PHY PHYSIOLOGICAL EFFECT			
AECH	Adenylate energy charges (AEC)	The Adenylate energy charge (AEC) accounts for the regulation of enzymatic activity by ATP, ADP and/or AMP.	<a href="http://digital.library.okstate.edu/oas/oas_pdf/v74/p31_36.pdf">digital.library.okstate.edu/oas/oas_pdf/v74/p31_36.pdf</a>
AEXR	Ammonia Excretion	No definition available.	
AHIN	A-H Intervals	The time from the initial rapid deflection of the atrial wave to the initial rapid deflection of the His bundle (H) potential; it approximates the conduction time through the A-V node (normally 50-120 msec).	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ALAE	Aminolevulinic acid excretion	Aminolevulinic acid excreted by organism	
ANBC	Aniline Binding Capability	No definition available.	
ASML	Assimilation Efficiency	Change in efficiency of trophic transfers between different levels in the food chain, e.g. between primary producers and grazers.	
ATFL	Aortic flow	The amount of blood flowing through the aorta.	
AVCD	AtrioVentricular conduction delay	Delays in conduction below the bifurcation of Bundle of His cause bundle branch or fascicular blocks, while atrioventricular conduction is maintained, unless all three fascicles are simultaneously affected. The causes are both intrinsic and extrinsic. However, since the AV node and bundle of His provide a special connection of the atria to the ventricles, focal injury from heart attacks, infections, catheter trauma, is common.	

PHY PHYSIOLOGICAL EFFECT			
AXSS	Axis shift	Related to the mean electrical axis of an EKG. The mean electrical axis of the QRS complex is the average of the total depolarization of the ventricles in the frontal plane. There is a correlation between the mean electrical axis of the QRS complex and the electrical activity of the heart. Therefore, in pathologic hypertrophy of either ventricle (ie. when there is more muscle being depolarized), the axis tends to shift in the direction of the hypertrophied ventricle.	
BAAT	rBAT induced amino acid transfer	The transport of amino acids via the rBAT induced system involves an electrogenic exchange of neutral and dibasic amino acids. rBAT is a protein that is located in the brush border membranes of intestine and renal proximal tubule cells.	ECOREF 45834
BDVL	Blood Volume	No definition available.	
BLPR	Blood pressure	Pressure that is exerted by the blood upon the walls of the blood vessels and especially arteries and that varies with the muscular efficiency of the heart, the blood volume and viscosity, the age and health of the individual, and the state of the vascular wall.	
BLUM	Bioluminescence	The emission of visible light by living organisms.	
BNDS	Bending strength	A measure of the load an object can bear if its ends are supported and a weight is attached to the middle, i.e. it is how many pounds of lateral force the object takes before it breaks.	
BTFT	Butter fat	The natural fat of milk and chief constituent of butter consisting essentially of a mixture of glycerides (as those derived from butyric, capric, caproic, and caprylic acids).	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
BTMP	Body Temperature\	No definition available.	
C14U	C-14 Uptake	Amount or process of Carbon-14 uptake by a cell.	

PHY PHYSIOLOGICAL EFFECT			
CAAS	Calcium assimilation	Amount of calcium assimilated.	
CAEX	Calcium excretion	Calcium excreted by organism.	
CANU	Calcium not excreted	Calcium utilized/Calcium ingested * 100.	
CARE	Calcium retained	Calcium retained/Calcium ingested * 100.	
CARU	Calcium retention to utilization ratio	Ratio of Calcium retained (Utilized - Transferred to Egg) to Calcium utilized (ingest - excreted).	
CASS	Carbon assimilation	Assimilation of carbon into an organism or tissue.	
CATR	Calcium transfer	Per cent of calcium transferred to the egg, Calcium in egg/Calcium utilized x 100.	
CATU	Calcium transfer to utilization ratio	Per cent of calcium transferred to the egg in relation to calcium utilized.	
CAUP	Calcium Uptake	No definition available.	
CCCL	Coccolith formation	One of the small, interlocking calcite plates covering members of the Coccolithophorida (unicellular, biflagellate, golden brown algae).	
CDIN	Cardiac index	The heart output per unit of time over body surface, usually expressed in terms of liters per minute per square meter.	
CDOP	Cardiac output	A measurement of the blood flow through the heart to the systemic (and pulmonary) circulation. Cardiac output is expressed as volume of blood per unit time or liters/minute.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CDUP	Cadmium Uptake	No definition available.	
CEBS	Cytosolic estrogen-binding sites	Measure of estrogen binding with sites within cytosol.	
CFIX	Carbon Fixation	No definition available.	
CFLW	Coronary flow	The amount of blood flowing through the coronary artery.	
CLFX	Chloride flux	Rate of movement of Chloride ions across membranes.	
CLNC	Clearance	The rate at which a substance is removed from the blood.	



PHY PHYSIOLOGICAL EFFECT			
CLRC	Caloric content	The energy derived from food is described by its caloric content.	
CLUP	Chloride uptake	Amount of chloride taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
CMPS	Compression strength	The maximum load an object can withstand before failure (or specified deformation) under standard test conditions.	
CMRB	Cholinergic muscarinic receptor binding	Distinct from the nicotinic cholinergic receptor in having no intrinsic ion channel, the receptor is formed from one protein chain with 7 transmembrane regions. The receptors produce their effect via activation of GTP-binding proteins.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CNVY	Conductivity	Degree to which a substance transmits (conducts) a given physical property, such as heat or electricity.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CO2A	Carbon dioxide assimilation	Assimilation of carbon dioxide into an organism or tissue.	
CO2F	CO2 Fixation	A mean in which photosynthetic bacteria obtain carbon for biosynthesis. Most commonly utilizing the Calvin cycle to convert CO2 to organic carbon.	<a href="http://instruct1.cit.cornell.edu/courses/biomi290/CO2FIX.html">instruct1.cit.cornell.edu/courses/biomi290/CO2FIX.html</a>
CO2T	Carbon Dioxide Tension, Partial Pressure of Carbon Dioxide, PCO2	No definition available.	
COCE	Coupling coefficient	The voltage change observed in a neuron when current is injected into another cell to which it is coupled by electrical synapses.	<a href="http://www.nature.com/cgi-taf/DynaPage.taf?file=/nrm/journal/v2/n6/abs/nrn0601_425a_r.html">http://www.nature.com/cgi-taf/DynaPage.taf?file=/nrm/journal/v2/n6/abs/nrn0601_425a_r.html</a>
COGH	Cough	A rapid expulsion of air from the lungs typically in order to clear the lung airways of fluids, mucus, or material	<a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a>
COLD	Cold Hardiness	No definition available.	
COUP	Cobalt uptake	Amount of cobalt taken in by an organism or an organism's tissues.	

PHY PHYSIOLOGICAL EFFECT			
CPCT	Capacitance	The property of an electric nonconductor that permits the storage of energy as a result of the separation of charge that occurs when opposite surfaces of the nonconductor are maintained at a difference of potential	Webster's
CRAT	Contraction rate	The rate at which a site contracts (e.g. muscle contraction).	
CREX	Chromium excretion	Chromium excreted in the urine by an organism.	
CRSP	Cellular respiration	The conversion within the cell of nutrients (such as sugar molecules) into chemical energy in the form of ATP, by reacting the food with oxygen (O <sub>2</sub> ) until the food has completely been degraded into carbon dioxide and H <sub>2</sub> O.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CRUP	Chromium uptake	Amount of chromium taken in by an organism or an organism's tissues.	
CTIM	Clotting Time	The time required for blood to coagulate; prolonged in haemophilia and in the presence of obstructive jaundice, some anemias and leukemias, and some of the infectious diseases.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
CTSL	Carbon translocation	The transfer of carbon from one part of an organism to another.	
CUUP	Copper Uptake	No definition available.	
CYSU	Cystine uptake	Amount of cystine taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
DCRG	Discharge	A flowing or issuing out or something that is emitted.	Webster's
DFIX	Dark Fixation	No definition provided	
DGST	Digestion	Digestion/digestibility. The conversion of food, in the stomach and intestines, into soluble and diffusible products, capable of being absorbed by the blood.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
DORB	Dormancy Break	No definition available.	
DORI	Dormancy Induction	No definition available.	
DRRH	Diarrhea	Abnormally frequent intestinal evacuations with more or less fluid stools.	Webster's

PHY PHYSIOLOGICAL EFFECT			
DSPS	Diastolic pressure	The intracardiac pressure during or resulting from the diastolic relaxation of a cardiac chamber; the lowest arterial blood pressure reached during any given ventricular cycle	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NRGA	Energy Assimilation	No definition available.	
ECPT	Energy charge potential	No definition available.	
ECTG	Electrocorticogram	A record of electrical activity derived directly from the cerebral cortex.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ECYC	Estrous cycle	The correlated phenomena of the endocrine and generative systems of a female mammal from the beginning of one period of estrus to the beginning of the next.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
EECG	Electroencephalogram	No definition available.	
EEUR	Endogenous Excreted Urea	No definition available.	
EFFC	Efficiency	The ratio of the useful energy delivered by a dynamic system to the energy supplied to it.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
EMCN	Emaciation	Extremely thin or physically wasted.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ENST	Encystment	The process of forming or becoming enclosed in a cyst or capsule.	
EOCL	Electro-oculography	Recording of the average amplitude of the resting potential arising between the cornea and the retina in light and dark adaptation as the eyes turn a standard distance to the right and the left. The increase in potential with light adaptation is used to evaluate the condition of the retinal pigment epithelium. Electrodes are placed on the skin adjacent to the eyes measure changes in standing potential between the front and back of the eyeball as the eyes move. A sensitive electrical test for detection of retinal pigment epithelium dysfunction.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

PHY PHYSIOLOGICAL EFFECT			
EPYR	Electrophysiological response	Pertaining to electrophysiology, the electrical results produced through physiological agencies, or by change of action in a living organism	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ERLD	Electroretinography light peak:dark trough ratio implicit time	The ratio of light peaks to dark troughs of the waves of the response of the test an in which an electrode is placed on the cornea of the eye to measure the electrical response of the rods and cones in the retina. It is useful in the evaluation of hereditary and acquired disorders of the retina. A normal test will show the appropriate pattern responses during moments of increased light intensity. Abnormal results can indicate arteriosclerosis of the retina, retinal detachment, temporal arteritis (with eye involvement) or vitamin A deficiency.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ERWA	Electroretinography wave amplitude	The wave amplitude response of the test an in which an electrode is placed on the cornea of the eye to measure the electrical response of the rods and cones in the retina. It is useful in the evaluation of hereditary and acquired disorders of the retina. A normal test will show the appropriate pattern responses during moments of increased light intensity. Abnormal results can indicate arteriosclerosis of the retina, retinal detachment, temporal arteritis (with eye involvement) or vitamin A deficiency.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

PHY PHYSIOLOGICAL EFFECT			
ERWI	Electroretinography wave implicit time	The wave implicit time response of the test an in which an electrode is placed on the cornea of the eye to measure the electrical response of the rods and cones in the retina. It is useful in the evaluation of hereditary and acquired disorders of the retina. A normal test will show the appropriate pattern responses during moments of increased light intensity. Abnormal results can indicate arteriosclerosis of the retina, retinal detachment, temporal arteritis (with eye involvement) or vitamin A deficiency.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ERWL	Electroretinography wave latent time	The wave latent time response of the test an in which an electrode is placed on the cornea of the eye to measure the electrical response of the rods and cones in the retina. It is useful in the evaluation of hereditary and acquired disorders of the retina. A normal test will show the appropriate pattern responses during moments of increased light intensity. Abnormal results can indicate arteriosclerosis of the retina, retinal detachment, temporal arteritis (with eye involvement) or vitamin A deficiency.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ERWV	Electroretinography wave	A test in which an electrode is placed on the cornea of the eye to measure the electrical response of the rods and cones in the retina. It is useful in the evaluation of hereditary and acquired disorders of the retina. A normal test will show the appropriate pattern responses during moments of increased light intensity. Abnormal results can indicate arteriosclerosis of the retina, retinal detachment, temporal arteritis (with eye involvement) or vitamin A deficiency.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
ESGM	Estrogen metabolism	The metabolism of estrogen to its breakdown products.	
ETSA	Electron Transfer System Activity	No definition available.	
EXCR	Excretion Rate	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
EYTH	Erythema	A name applied to redness of the skin produced by congestion of the capillaries, which may result from a variety of causes, the etiology or a specific type of lesion often being indicated by a modifying term.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
FATT	Obese	Heavy, overweight.	
FDCV	Food Conversion Efficiency	No definition available.	
FEPP	Fecal production	No definition available.	
FEUP	Iron Uptake	No definition available.	
FLUX	Rate of Movement of Ions Across Membranes	No definition available.	
FVOL	Fluid volume	The amount of space occupied by a three-dimensional object as measured in cubic units.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
GAEX	Glycolic acid excretion	Excretion of glycolic acid, which often serves as a basic component of the extracellular compounds of microalgae and is also the main substrate of photorespiration.	
GFRT	Glomerular Filtration Rate	No definition available.	
GLFO	Galactoceles formation	A clogged milk duct, often associated with childbirth. (cancerweb.ncl.ac.uk)	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GLGN	Glucogenesis	The making of molecules of the sugar glucose within a living cell from something other than glycogen (a polysaccharide of glucose molecules).	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
GLSY	Glycogen synthesis	The rate at which glycogen is produced in an organism.	
GLUP	Glucose uptake	Amount of glucose taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
GLYU	Glycine uptake	Amount of glycine taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP

PHY PHYSIOLOGICAL EFFECT			
GPHY	Physiology, General	Change in the organic processes or functions of a plant or an organism. Examples of effects in this category include caloric content, cough frequency, granule or concretion formation, heartbeat, membrane permeability, metabolic stress, osmoregulation, , urine frequency, ventilatory rate.. Used when more than one measurement is coded for an ACQUIRE record.	Currently an ACQUIRE ONLY code.
GRAU	Granule/Grain Creation	No definition available.	
GSTF	Gas Transfer	No definition available.	
GYCU	Glycerol uptake	Amount of glycerol taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
GYEX	Glycolate excretion	The excretion of a salt or ester of glycolic acid.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
H3BD	Hemicholinium-3 binding	A potent inhibitor of the high affinity uptake system for choline. It has less effect on the low affinity uptake system. Since choline is one of the components of acetylcholine, treatment with hemicholinium can deplete acetylcholine from cholinergic terminals.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
H3UP	H-3 Uptake	Amount of H-3 taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
HCFX	Hydrogen carbonate flux	Rate of movement of Hydrogen Carbonate ions across membranes	
HGUP	Mercury uptake	Amount of mercury taken in by an organism or an organism's tissues.	
HLSS	Alopecia, Hair loss	Absence of hair from skin areas where it is normally present.	
HNPH	Hydronephrosis	Abnormal enlargement of a kidney, may occur secondary to acute ureteral obstruction (kidney stone) or chronic kidney disease.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HPRR	Heat production rate	No definition available.	
HPSR	High pressure	Increase in pressure in an organ or tissue	(BPK)
HTDP	Heart Double Product	Heart rate * cardiac output.	
HTRT	Heart Rate	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
HYDR	Hydration	The incorporation of molecular water into a complex molecule with the molecules or units of another species.	
HYPR	Hyperactivity	General restlessness or excessive movement such as that characterizing children with attention deficit disorder or hyperkinesis	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
HYTN	Hypertension	Persistently high arterial blood pressure. Hypertension may have no known cause (essential or idiopathic hypertension) or be associated with other primary diseases (secondary hypertension).	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
INRE	Input resistance	The input resistance, is defined as the ratio between the strengths of the resultant voltage response and the current that is injected in a neuron.	<a href="http://mrbs.niddk.nih.gov/hagai/publ/decpoi/Defsmeth.html">http://mrbs.niddk.nih.gov/hagai/publ/decpoi/Defsmeth.html</a>
<IOUP>	Ion Uptake	No definition available.	
IUPT	Iodine Uptake	Amount of iodine taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
IRRI	Irritation	No definition available.	
IVCD	Intraventricular conduction defects	Nonspecific intraventricular conduction defects are diagnosed when the QRS is modestly prolonged (< 120 msec) and the QRS pattern and axis are not typical of a hemiblock. The conduction delay is considered to occur beyond the Purkinje's myocardial gates and arises from slow cell-to-cell conduction. The phenomenon is common in patients with acute MI. No treatment is indicated.	
JRAC	Junctional resistance (AC)	Measured by AC current. Measured junctional resistance is isolated from ground potential by seals and peripheral membrane resistances.	<a href="http://link.springer-ny.com/link/service/journals/00424/fpapers/esc/contents/02/00896/paper/s00424-002-0896-8ch100">http://link.springer-ny.com/link/service/journals/00424/fpapers/esc/contents/02/00896/paper/s00424-002-0896-8ch100</a> .



PHY PHYSIOLOGICAL EFFECT			
JRDC	Junctional resistance (DC)	Measured by DC current. Measured junctional resistance is isolated from ground potential by seals and peripheral membrane resistances.	<a href="http://link.springer-ny.com/link/service/journals/00424/fpapers/esc/contents/02/00896/paper/s00424-002-0896-8ch100">http://link.springer-ny.com/link/service/journals/00424/fpapers/esc/contents/02/00896/paper/s00424-002-0896-8ch100</a> .
KEXC	Potassium excretion	Potassium excreted by organism	ECOTOX
KUPT	Potassium Uptake	No definition available.	
LABS	Leucine absorption	The absorption of leucine into an organism	
LDGT	Lipid digestion	The conversion of lipid, in the stomach and intestines, into soluble and diffusible products, capable of being absorbed by the blood.	
LDMT	Lipid metabolism	Metabolism of lipid or fat by an organism	ECOTOX Staff
LDPX	Lipid Peroxidation	No definition available.	
LEUT	Leucine Transport	The transport of the most abundant amino acid found in proteins. Confers hydrophobicity and has a structural rather than a chemical role.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LPBS	Lipid biosynthesis	The building up of a chemical compound in the physiologic processes of a living organism, in this case lipids.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
LTPT	Long-term potentiation	A prolonged increase in synaptic responses that can be induced in certain neural pathways by a brief tetanic stimulation.	ECOREF#75007
LTSP	Leucine transport	The transport of leucine in an organism.	
MBCR	Metallothionein Binding Capacity Ratio	The ratio of toxicant to toxicant-binding capacity of metallothionein (MT) in tissues. The ratio of unbound metal to metal binding capacity of metallothionein within an organism.	
MCCL	Malocclusion	Inappropriate contact between the teeth on closure.	
MCCN	Microorganism Cenosis	A group of organisms in a self-sufficient community naturally occupying a small area with a uniform environment throughout.	

PHY PHYSIOLOGICAL EFFECT			
MCUS	Mucus Production	No definition available.	
MGUP	Magnesium Uptake	No definition available.	
MILK	Milk	A fluid secreted by the mammary glands of females for the nourishment of their young.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
MNER	Mineralization	Process of converting mineral or inorganic form.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
MNTL	Manganese translocation	The ability of an organism to move manganese from one location to another.	
MNUP	Manganese Uptake	No definition available.	
MYCO	Mycorrhizal Colonization	No definition available.	
NAFX	Sodium flux	Rate of movement of sodium ions across membranes.	
NASM	Nitrogen assimilation	Amount of nitrogen assimilated.	
NAST	Nastic Movements	Movement of a flat plant part, oriented relative to the plant body and produced by diffuse stimuli causing disproportionate growth or increased turgor pressure in the tissues of one surface.	
NAEX	Sodium excretion	Sodium excreted by organism	
NAUP	Sodium uptake	The ability of an organism to remove sodium from a substrate and take sodium into its body.	
NCOS	Na and Cl osmolality	The fractional contribution of Na <sup>+</sup> and Cl <sup>-</sup> to osmolality (Na <sup>+</sup> + Cl <sup>-</sup> /osmolality).	ECOREF 48368
NO3U	Nitrate Uptake (NO <sub>3</sub> <sup>-</sup> )	The ability of an organism to remove nitrate from a substrate and take nitrate into its body (ECOTOX). Nitrate (NO <sub>3</sub> <sup>-</sup> ) is a salt or ester of nitric acid	<a href="http://www.m-w.com">www.m-w.com</a>
NEXC	Nitrogen excretion	Nitrogen excreted by organism.	
NFIX	Nitrogen Fixation	Change in ability of plants to fix nitrogen.	
NIUP	Nickel Uptake	No definition available.	
NMYC	Non-mycorrhizal colonization	No definition available.	
NPRA	Net Photosynthetic Rate	No definition available.	
NRGF	Metabolic efficiency	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
NRGI	Energy intake	No definition available.	
NRGM	Metabolized energy	No definition available.	
NRGX	Energy excreted	No definition available.	
NRSP	Neuroresponse	No definition available.	
NRUP	Neutral Red Uptake	No definition available.	
NRXN	Nerve reaction	Amount of time or a response of a nerve to a stimulus.	
NTSL	Nitrogen translocation	The ability of an organism to move nitrogen from one location to another.	
NUPT	Nitrogen Uptake	No definition available.	
NVAR	Nerve absolute refractory period	The period following excitation when no response is possible regardless of the intensity of the stimulus.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
NVCV	Nerve conduction velocity	Time it takes for a nerve to transmit a signal.	
NVRR	Nerve relative refractory period	The period between the effective refractory period and the end of the refractory period; fibres then respond only to high intensity stimuli and the impulses conduct more slowly than normally.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
OCCP	Oxygen Carrying Capacity	No definition available.	
OSFG	Osmotic fragility	The susceptibility, or lack of resistance, of erythrocytes to haemolysis when exposed to increasingly hypotonic saline solutions. Measured by the erythrocyte fragility test.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
OSMO	Osmolality	The osmolality of an ideal solution of a nondissociating substance that exerts the same osmotic pressure as the solution being considered.	
OXYG	Oxygen Consumption	Quantifiable change in oxygen uptake by the test organism.	for plants see PSYN (photosynthesis).
OXYT	Oxygen Tension, Partial Pressure of Oxygen Dioxide, Po <sub>2</sub>	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
PAMP	P amplitude	The P wave represents atrial depolarization - the time necessary for an electrical impulse from the sinoatrial (SA) node to spread throughout the atrial musculature.	<a href="http://www.utoledo.edu/~xflores/ekgs-interpretation.htm">http://www.utoledo.edu/~xflores/ekgs-interpretation.htm</a>
PAEX	Primary amine excretion	Excretion of an amine containing the amido group, or a derivative of ammonia in which only one atom of hydrogen has been replaced by a basic radical; -- distinguished from secondary & tertiary amines.	(Merriam-Webster Medical Dictionary)
PBAL	Ponderal balance	Is equal to [(Urine + Feces - Drinking Water - Consumed Food + (Weight Change/Initial Weight)) * 100]	ECOREF 56796
PBEX	Lead excretion	Lead excreted by organism.	
PBUP	Lead Uptake	No definition available.	
PDGT	Protein digestion	The conversion of protein, in the stomach and intestines, into soluble and diffusible products, capable of being absorbed by the blood.	
PERA	Protein Efficiency Ratio	No definition available.	
PERM	Permeability, tissue, membrane	The ability of a membrane or other material to permit a substance to pass through it.	
PEXC	Phosphorus excretion	Phosphorus excreted by organism.	
PGPL	Pigment plug ejection	A disturbance of the digestive system where the ejection of pigment plugs from the rectum occurs	ECOREF#65576

PHY PHYSIOLOGICAL EFFECT			
PGSY	Prostaglandin synthesis	Any of a group of components derived from unsaturated 20 carbon fatty acids, primarily arachidonic acid, via the cyclooxygenase pathway that are extremely potent mediators of a diverse group of physiologic processes. The abbreviation for prostaglandin is PG, specific compounds are designated by adding one of the letters A through I to indicate the type of substituents found on the hydrocarbon skeleton and a subscript (1, 2 or 3) to indicate the number of double bonds in the hydrocarbon skeleton for example, PGE <sub>2</sub> . All of the prostaglandins act by binding to specific cell surface receptors causing an increase in the level of the intracellular second messenger cyclic AMP (and in some cases cyclic GMP also). The effect produced by the cyclic AMP increase depends on the specific cell type. Increased cyclic AMP increases prostaglandin synthesis leading to further increases in cyclic AMP. See also individual prostaglandins.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PIGM	Pigmentation	Quantitative (ie., compared to the control) change in the pigment, e.g. melanization.	Does not include chlorophyll (see CLR). If pigment levels are reported code in BCM.
PNUT	Phosphorus not excreted	Phosphorus utilized/Calcium ingested * 100.	
PPUP	Phosphate uptake	The ability of an organism to remove phosphate from a substrate and take phosphate into its body.	
PRET	Phosphorus retained	Phosphorus retained/Calcium ingested * 100.	
PRIN	PR Intervals	The PR interval measures the beginning of arterial depolarization through the beginning of ventricular depolarization.	
PRSY	Protein Synthesis	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
PRUT	Phosphorus retention to utilization ratio	Ratio of Phosphorus retained (Utilized - Transferred to Egg) to Phosphorus utilized (ingested - excreted).	
PSYI	Photosystem I (PSI) Electron Transport Activity	Photosynthetic system in chloroplasts in which light of up to 700 nm is absorbed and its energy used to bring about charge separation in the thylakoid membrane. The electrons are passed to ferredoxin and then used to reduce NADP to NADPH noncyclic electron flow or to provide energy for the phosphorylation of ADP to ATP (cyclic photophosphorylation).	cancerweb.ncl.ac.uk
PSII	Photosystem II (PSII) Electron Transport Activity	No definition available.	
PSSR	Pressure	The act of pressing, or the condition of being pressed; compression; a squeezing; a crushing.	
PSYN	Photosynthesis	Change in plant productivity indicated by change in $^{14}\text{C}$ or $\text{CO}_2$ uptake or oxygen production.	
PTIM	Prothrombin time	The clotting of blood, also known as coagulation time or clotting time.	
PTRN	Phosphorus transfer	Per cent of phosphorus transferred to the egg, Phosphorus in egg/Phosphorus utilized x 100.	
PTUC	Protein Utilization Coefficient	No definition available.	
PTUT	Phosphorus transfer to utilization ratio	Percent of phosphorus transferred to the egg in relation to phosphorus utilized.	
PUPT	Phosphorus Uptake	No definition available.	
QAMP	Q amplitude	Depolarization of the septum. It is the first downward (negative) deflection before the R wave.	<a href="http://www.udel.edu/HESC/physLab/TotalReview.htm">http://www.udel.edu/HESC/physLab/TotalReview.htm</a>
QRSV	Decreased QRS voltage	QRS Complex = The deflections in an electrocardiographic tracing and represent ventricular activity of the heart.	

PHY PHYSIOLOGICAL EFFECT			
QTIN	QT Interval	Time from electrocardiogram Q wave to the end of the T wave corresponding to electrical systole.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
RAMP	R amplitude	Depolarization of the apex. It is a upward (positive) deflection.	<a href="http://www.udel.edu/HESC/physLab/TotalReview.htm">http://www.udel.edu/HESC/physLab/TotalReview.htm</a>
RBCD	Relative bradycardia	Bradycardia = slow heart rate.	
RCRA	Renal Clearance Ratio	No definition available.	
RESP	Respiration, O2 Production, CO2 Production	No definition available.	
RESQ	Respiration Quotient	No definition available.	
RPRT	Respiratory Rate	No definition available.	
SAMP	S amplitude	Depolarization of the ventricular wall. The S wave a downward (negative) deflection after an R wave.	<a href="http://www.udel.edu/HESC/physLab/TotalReview.htm">http://www.udel.edu/HESC/physLab/TotalReview.htm</a>
SBNF	Swim bladder inflation	The ability for inflation of the swim bladder, a gas filled cavity found in the body cavity of most bony fishes.	
SCGR	Scope for Growth	SFG= (energy consumed * assimilation efficiency) - energy lost through respiration.	
SENE	Senescence	The study of the biological changes related to aging.	
SENI	Senescence Induced/Accelerated	No definition available.	
SENR	Senescence Retarded	No definition available.	
SEUP	Selenium Uptake	No definition available.	
SIDP	Siderophore production	Production of natural iron binding compounds that chelate ferric ions (which form insoluble colloidal hydroxides at neutral pH and are then inaccessible) and are then taken up together with the metal ion.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
SLVN	Salivation	To have a flow of saliva especially in excess.	Webster's
SMTR	Standard Metabolic Rate	An ectothermic animal's resting and fasting metabolism at a given body temperature.	<a href="http://www.cartage.org.lb/en/themes/Science/Zoology/AnimalPhysiology/Glossary/S/standardmetabolicrate.htm">http://www.cartage.org.lb/en/themes/Science/Zoology/AnimalPhysiology/Glossary/S/standardmetabolicrate.htm</a>

PHY PHYSIOLOGICAL EFFECT			
SOXA	Sulfide oxidation activity	No definition available.	
SOXG	Superoxide Generation	No definition available.	
SRLO	Spectral Reflectance/Shift to Longer Wavelengths	No definition available.	
SRSH	Spectral Reflectance/Shift to Shorter Wavelengths	No definition available.	
STAS	Stasis	A state of static balance or equilibrium.	
STCG	S-T changes	Related to EKG, S-T Segment. The line between the end of the S wave and the beginning of the T wave.	
STIN	ST interval	Time interval from the ending of the S-wave until the ending of the T-wave (in milliseconds).	<a href="http://bct.tn.utwente.nl/Definitions.htm">http://bct.tn.utwente.nl/Definitions.htm</a>
STOC	Stomatal Conductance	A plant property related to the ease with which water vapor escapes from plant leaves through small pores in the leaves known as stomata.	<a href="http://www.co2science.org/dictionary/define_s.htm">http://www.co2science.org/dictionary/define_s.htm</a>
STOM	Stomatal Aperture	No definition available.	
STVL	Stroke volume	The total volume of blood pumped by the heart in a single beat.	
STWK	Stroke Work	The work done by the ventricle to eject a volume of blood into the aorta.	<a href="http://www.oucom.ohiou.edu/CVPhysiology/C_F019.htm">http://www.oucom.ohiou.edu/CVPhysiology/C_F019.htm</a>
SUPT	Sulfur uptake	A nonmetallic element that occurs either free or combined especially in sulfides and sulfates, is a constituent of proteins, exists in several allotropic forms including yellow orthorhombic crystals, resembles oxygen chemically but is less active and more acidic, and is used especially in the chemical and paper industries, in rubber vulcanization, and in medicine for treating skin diseases.	
SWEL	Swelling	No definition available.	



PHY PHYSIOLOGICAL EFFECT			
SYPS	Systolic Pressure	The pressure exerted on the walls of the arteries during the contraction phase of the heart. Considered abnormally elevated if consistently over 150 mmHg. Systolic blood pressure varies with age, sex, size and relative condition.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
SZRE	Seizure	A sudden attack or convulsion due to involuntary electrical activity in the brain.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
T34C	T3/T4 Conversion rate	The turnover of T3 divided by the turnover of T4 times 100 is the conversion rate.	ECOREF 65157
TAMP	T amplitude	The T wave represents the repolarization of the ventricles. On rare occasions, a U wave can be seen following the T wave.	<a href="http://www.utoledo.edu/~xflores/ekgs-interpretation.htm">http://www.utoledo.edu/~xflores/ekgs-interpretation.htm</a>
TEAR	Lacrimation, Tearing	Shedding of tears.	
TEUR	Total Excreted Urea	No definition available.	
TEVG	trans-epithelial voltage gradient	Measured by an electro-olfactogram. Ions of opposite charge actively transported across the apical membrane barrier through the paracellular pathway in response to the transepithelial voltage gradient. The osmotic gradient created by the net transepithelial flow of ions thus provides the driving force for liquid movement across the airway epithelium.	<a href="http://jap.physiology.org/cgi/content/full/91/2/797">http://jap.physiology.org/cgi/content/full/91/2/797</a>
TEXT	Texture Change	No definition available.	
THBR	Thyroid Hormone Binding Ratio	Recommended nomenclature for T3 Uptake test. A ratio of the solid matrix uptake and the serum uptake.	<a href="http://www.abbottdiagnostics.com/glossary/glossary_t.htm">http://www.abbottdiagnostics.com/glossary/glossary_t.htm</a>
THRG	Thermoregulation	No definition available.	
TIRD	Languid, tired, weak	Drooping or flagging from exhaustion; indisposed to exertion; without animation; weak.	
TNST	Tensile Strength	The maximum stress a material subjected to a stretching load can withstand without tearing.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

PHY PHYSIOLOGICAL EFFECT			
TRAN	Transpiration	The passage of a gas or liquid (in the form of vapor) through the skin, a membrane, or other tissue.	
VENT	Ventilation, Opercular Movements, Undulatory Movements	No definition available.	
VMRS	Vasomotor response	Vasomotor = Pertaining to the regulation of the constriction or expansion of blood vessels.	
VSCR	Vascular resistance	An expression of the resistance offered by the systemic arterioles, and to a lesser extent by the capillaries, to the flow of blood.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
WLSS	Water loss	A decrease in water in cells, organs tissues or bodies.	(BPK)
WTUP	Water uptake	No definition available.	
WILT	Wilt	No definition available.	
ZNUP	Zinc Uptake	No definition available.	

## POP POPULATION GROUP

POP POPULATION EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ABND	Abundance (Number of Organisms/Area; Density)	Number of individuals of a taxon per unit area equivalent to density. Comparison to controls; not related to time.	Use for coding efficacy of removal of lice from fish.
BMAS	Biomass;	Includes Harvest Yield, Fruit or Seed Yield, Mass of Organism, Mass of Population.	
CHLA	Chlorophyll A Content	Pigment found in photosynthetic cells; occurs in all organisms exhibiting aerobic photosynthesis.	
CHLO	Chlorophyll Content	Pigment found in photosynthetic cells. Measurable change in chlorophyll content including chlorophyll content, chlorosis.	
CNTL	Control	To reduce the incidence or severity of, especially of weeds or insects to	

POP POPULATION EFFECT			
		innocuous levels.	
COVR	Cover, Canopy	Area covered by canopy.	
DBLT	Population doubling time	The time (usually reported in years) that it takes a population to double its present size.	
DBMS	Dry Biomass	Biomass measured on a dry weight basis	
DRFT	Drift	Change in the number of larval aquatic insects to travel a given distance in a stream.	
DVRS	Diversity, Evenness	Change in number of species in a given area or index of species diversity (e.g. species richness, evenness).	
EBCN	Effective Body Concentration	The body residue of a chemical that is associated with an effect.	
GENT	Generation Time	No definition available.	
GPOP	Population Changes, General	Used when more than one measurement is coded for an AQUIRE record.	
INDX	Index to Population Size; Count, Number, Abundance	No definition available.	
IRIN	Intrinsic Rate of Increase	Intrinsic Rate of Increase (r): A measure of the rate of growth of a population. This is the instantaneous rate of change (per individual per time interval), assuming the population is in stable age distribution. It is equal to the natural log (ln) of the Finite Rate of Increase.	<a href="http://darkwing.uoregon.edu/~bsl/demography/glossary.html#Intrinsic">http://darkwing.uoregon.edu/~bsl/demography/glossary.html#Intrinsic</a>
LAGT	Lagtime	No definition available.	
LCON	Length/duration of a chemical effectiveness	Represents the duration of time that a chemical retains its efficacy against a species or population. Usually reported as the first day after application that a species appears in the treated area.	BPK
LCYC	Lifecycle	Total time taken by adults to produce new adults.	
NCHG	Population Change (Change in N/Change in	No definition available.	

POP POPULATION EFFECT			
	Time)		
NGEN	Number of generations	Number of generations in a population.	
PBMS	Biomass or Weight of Entire Population	No definition available.	
PBRA	Biomass Turnover Ratio (Population/Biomass)	A measure that depends directly on growth and reproduction and indirectly on fertility through the rate of increase.	
PCCP	Population Carrying Capacity	Change in the carrying capacity of the population.	
PGRT	Population Growth Rate	Rate of growth. Equivalent to maximum possible rate of growth for species populations and colonies. Calculated by relating biomass or abundance to time. Life table data, germination rates are also included.	
PSYN	Photosynthesis	Photosynthesis of an entire population usually algae. Change in productivity indicated by change in $^{14}\text{C}$ or $\text{CO}_2$ uptake or oxygen production.	
PRPE	Predator/Prey Dynamics	No definition available.	
RCLN	Colonization Rate	Change in ability to colonize an uninhibited substrate under toxicant stress.	
RCPR	Recapture Ratio	Measure of size of an animal population; used to estimate the population size of a single species of highly mobile animals	
SEXR	Sex Ratio	No definition available.	
STTL	Settling	No definition available.	
SURF	Surface Area	No definition available.	
SZDS	Size distribution	Number of organisms at certain lengths or weights measured within a population.	
THCH	Thatch accumulation	No definition available.	
TRAP	Trappability	No definition available.	
VIDX	Viability index	Number of survivors on day 4/numbers of survivors on day 1.	
WGHT	Weight	No definition available.	

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**REP REPRODUCTION GROUP**

REP REPRODUCTIVE EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ORSM	No resorbed embryos	No resorbed embryos.	
<ABNM>	Abnormal	Effects which occur to the organism that has been directly exposed (compare to teratogenic effects). Effects included under this measurement include nonspecific physical malformations, deformities, defects, discoloration, anomalies, vegetative vigor, etc.	DO not code REP ABNM. ABNM should be coded under MPH (when adult body structures are changing) or DVP (when embryo or juveniles are becoming abnormal throughout different lifestages)
ABRT	Abort	To miscarry; to bring forth young prematurely.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
AFST	Atretic follicle stage	The stage of development of the follicles in the ovary marked by degenerative follicles with shrunken, irregular borders.	ECOREF 52243
BDEP	Bird day egg production	Number of eggs produced/number of birds alive * 100.	
<BMAS>	Biomass;	Includes Harvest Yield, Fruit or Seed Yield, Mass of Organism, Mass of Population.	
BNDG	Pair Bonding Nesting Behavior	No definition available.	
BRED	Bred	To propagate plants or animals sexually.	
BTCF	Beat/Cross frequency	A standard sperm motility measurement, the beats per second divided by the number of times the head crosses the mean head trajectory per second.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
CLLT	Clutch length	Number of days in a row on which a hen lays an egg is referred to as the clutch length.	
CLNE	Cloning efficiency	The ability of an organism to produce clones.	

REP REPRODUCTIVE EFFECT			
CLPD	Clutch production	The time it takes to produce a clutch or the number of eggs in a clutch.	
CLUB	Clubbing (Hydra Reproduction)	No definition available.	
COUR	Courtship Behavior, Sexual behavior	No definition available.	
CRCE	Circular cells	A standard sperm motility measurement, the number of spermatozoa swimming in circles.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
CYNG	Care of Young, Nest Attentiveness	No definition available.	
DSTR	Diestrus	Period of sexual quiescence separating phases of the estrous cycle in polyestrous animals.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
EBCN	Effective Body Concentration	The body residue of a chemical that is associated with an effect.	
EGPN	Eggs per Nest or clutch	No definition available.	
EPTT	Epididymal transit time	The duration of sperm transit through epididymis and vas deferens	ECOREF#74183
EREM	Early resorbed embryos	Embryos resorbed during the early part of the reproductive cycle.	
ETRS	Estrus	That portion or phase of the sexual cycle of female animals characterized by willingness to permit coitus; readily detectable behavioral and other signs are exhibited by animals during this period.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
FCND	Fecundity	The innate potential reproductive capacity of the individual organism, as denoted by its ability to form and separate from the body the mature germ cells.	
FERT	Fertile, Fertility	Fertility - The capacity to conceive or induce conception.	
FERZ	Fertilization	The physiochemical processes involved in the union of the male and female gametes to form the zygote.	
FIDX	Fertility index	(Number fertile/Number cohabitated)*100.	
FRUT	Fruit, fruiting	The usually edible reproductive	Webster's

REP REPRODUCTIVE EFFECT			
		body of a seed plant; especially : one having a sweet pulp associated with the seed.	
FTCC	Fertile cocoons	No definition available.	
FLOR	Floral Induction	No definition available.	
FRMS	Frames, Bees	No definition available.	
FRUH	Percent Fruit Harvested	No definition available.	
GCCT	Germ cell count	Number of sperm or eggs in the gonad or sample.	
GERM	Germination	The beginning or the process of development of a spore or seed.	
GEST	Gestation Rate	The percentage of mated females that delivered at least one viable fetus	ECOREF 58044
GFST	Graafian follicle stage	The stage of development of the follicles in the ovary marked by large follicles bordered by an amphophilic egg membranes with a central core of eosinophilic yolk proteins.	ECOREF 52243
GMET	Gamete production	Creation of a sex cell, egg, or sperm. Includes spermatogenesis.	
GIDX	Gestation Index	No definition available.	
GMEN	Germination Energy	$GE = [(n_1 - n_0)/t_1 + (n_2 - n_1)/t_2 + (n_3 - n_2)/t_3 + \dots (n_i - n_{i-1})/t_i] * 100/R = 0/0$ $n_1, n_2, n_3 \dots n_i = \text{Cumulative germination counts on consecutive days}$ $t_1, t_2, t_3 \dots t_i = \text{numbers of days after beginning of test}$ $R = \text{constant obtained by dividing 100 (which is a perfect germination percentage value for any species) by number of days on which first germination evaluations were made under international rules}$	
GREP	Reproduction, General	Change in male and/or female reproductive ability; fertilization and fertilization rate; vegetation reproductive processes. Used when more than one measurement is coded for an AQUIRE record.	
GSTT	Gestation Time	Gestation period = The period in mammals from fertilization to birth.	
HDEP	Hen-day egg production	Number of eggs produced / number	

REP REPRODUCTIVE EFFECT			
		of live hens x 100.	
HHEP	Hen-housed egg production	The cumulative number of eggs produced by the flock divided by the number of birds originally placed in the flock.	<a href="http://www.aphis.usda.gov/vs/ceah/cahm/Poultry/lay99de2.htm">http://www.aphis.usda.gov/vs/ceah/cahm/Poultry/lay99de2.htm</a>
IFCC	Infertile cocoons	No definition available.	
INFL	Inflorescence	The group or arrangement in which flowers are borne on a plant. Number of flowers on a plant.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
INFT	Infertile	No definition available.	
LACG	Lactating	To secrete milk.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
LHMN	Mean amplitude of lateral head displacement	A standard sperm motility measurement, the average of all deviations of the head displacement from the mean head trajectory.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
LHMX	Maximum amplitude of lateral head displacement	A standard sperm motility measurement, the maximal deviation of the head displacement from the mean head trajectory.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
LIDX	Lactation index	Percent of animals alive at the 4 days that survive the 21 day lactation period.	
LNRY	Linearity	A standard sperm motility measurement, the distance in straight line divided by actual distance traveled.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
LREM	Late resorbed embryos	Embryos resorbed during the late part of the reproductive cycle.	
MIDX	Mating index	Number of animals with seminal plugs or sperm/number of animals mated times 100.	<a href="http://www.ilo.org/public/english/protection/safework/ghs/ghsfinal/ghsc11.pdf">www.ilo.org/public/english/protection/safework/ghs/ghsfinal/ghsc11.pdf</a>
MONT	Mounting, Copulation, Intercourse, Mating	A reproductive behavior in which one animal climbs atop a second animal. Also copulation, intercourse, and mating.	
MOTL	Motility	Sperm motility.	
MSPW	Mean spawns per female	The mean number of times a female has spawned.	
MSTR	Metestrus	Short period following estrus during which the phenomena of estrus subside in those animals in which pseudopregnancy does not occur.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>



REP REPRODUCTIVE EFFECT			
NANT	Nests Abandoned	No definition available.	
NCLU	Corpus Lutea, Number of	No definition available.	
NDAY	Number of Days Between Eggs Laid	No definition available.	
NEGI	Number of Eggs Incubated	No definition available.	
NFOL	Number of ovarian follicles	An ovarian follicle, an oocyte surrounded by one or more layers of granulosa cells. As the ovarian follicle develops a cavity forms and it is then termed a Graafian follicle.	cancerweb.ncl.ac.uk
NINC	Number of Nests Incubated	No definition available.	
NMNT	Non-mount	A reproductive behavior which does not occur. This includes one animal climbing atop a second animal. Also copulation, intercourse, and mating.	
NOIM	Number of implantations	The number of embryos that attached to the maternal uterine wall.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
NOPN	Number of Organisms per Nest	No definition available.	
NPOD	Number of Pods	No definition available.	
NPRG	Not pregnant	Not containing unborn young within the body.	
NREP	Non-reproducing organisms	Barren plants or organisms.	
NRPR	Net Reproductive Rate	(Ro) Average number of offspring or seeds produced by an individual in a population during its lifetime. Figured by the life table equation: $R_o = \sum l_x m_x$ , where $l_x$ = the probability of survival from birth to age x and $m_x$ = the average number of births per individual of age x.	<a href="http://www.muw.edu/~mharvill/studch10.rtf">www.muw.edu/~mharvill/studch10.rtf</a> and Population Biology: The Evolution and Ecology of Populations, Chapter 12, P.W.Hedrick
NSNT	Successful Nests	No definition available.	
NSPN	Number Spawning	No definition available.	
NSTS	Number of Active Nests	No definition available.	
NSTI	Nest Initiation	No definition available.	
NSTS	Number of Nests Produced	No definition available.	

REP REPRODUCTIVE EFFECT			
NTSZ	Nest Size	No definition available.	
NUNT	Unsuccessful Nests	No definition available.	
NVIB	Non-viable	Not capable of living; especially : not capable of surviving outside the womb without artificial support.	Webster's
OBRD	Open Brood	No definition available.	
OEGP	Onset of Egg Production	No definition available.	
OOCY	Fully Developed Oocytes	No definition available.	
OVRT	Ovulation Rate	No definition available.	
PCNT	Placentation	In mammals, the process of a placenta forming during gestation. In plants, the arrangement of placentas, and hence of ovules, within an ovary.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
PFST	Primary follicle stage	The stage of development of the follicles in the ovary marked by large nucleus, abundant basophilic cytoplasm and no yolk vesicles.	ECOREF 52243
PILS	Post-implantation loss	The loss of implanted embryos. This is calculated by determining the ratio of dead to total implants from the treated group compared to the ratio of dead to total implants from the control group.	
PIPD	Pipped	To break through the shell	<a href="http://www.inhs.uiuc.edu/chf/pub/virtualbird/glossary.html">http://www.inhs.uiuc.edu/chf/pub/virtualbird/glossary.html</a>
PLBR	Pairs with Litter or Brood	No definition available.	
PREG	Pregnant, paris or gravid	Containing unborn young within the body , distended with or full of eggs.	
PRFM	Pregnant Females in a Population	No definition available.	
PROG	Progeny	Includes Counts, Numbers, Clutch, Litter or Brood Size, Progeny Produced Within a Specified Time Period, Numbers of Progeny per Parent Organism.	
PRPL	Preimplantation loss	Loss of an embryo before uterine implantation.	<a href="http://www.m-w.com/">http://www.m-w.com/</a>
PRTH	Parthenocarp	Production of fruit without fertilization.	
PSPG	Pseudopregnancy	False pregnancy. The term	<a href="http://cancerweb.ncl.ac">http://cancerweb.ncl.ac</a>

REP REPRODUCTIVE EFFECT			
		sometimes refers also to the premenstrual stage of the endometrium because it resembles the endometrium just before implantation of the blastocyst.	.uk/omd/
PSTG	Stage of Pregnancy	No definition available.	
PSTR	Proestrus	Phase of the estrous cycle preceding estrus during which the Graafian follicle undergoes maturation. Applies to animals.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>
RBEH	Reproductive Behavior Changes	No definition available.	
REPO	Reproducing organisms	Organisms that have produced offspring.	
RPLM	Repeat bloom	Repeat bloom, or bloom in the next year.	<a href="http://www.cahe.nmsu.edu/pubs/_h/h-321.html">http://www.cahe.nmsu.edu/pubs/_h/h-321.html</a> )
RPRD	Reproductive Capacity	No definition available.	
RSEM	Resorbed Embryos	No definition available.	
RSUC	Reproductive Success (General)	No definition available.	
SBRD	Sealed Brood	No definition available.	
SDIX	Seed Index	Grams per 100 seeds.	definition from paper
SEED	Seed Number	No definition available.	
SEPD	Seed or spore production	Production of seed or spore by vegetative process	
SFST	Secondary follicle stage	The stage of development of the follicles in the ovary marked by the presence of numerous eosinophilic yolk vesicles.	ECOREF 52243
SPCL	Sperm Cell Counts	No definition available.	
SPMC	Spermatocytes	A cell giving rise to sperm cells; especially : a cell that is derived from a spermatogonium and ultimately gives rise to four haploid spermatids.	Webster's
SPMG	Spermatogonia	A primitive male germ cell.	
SPNF	Spawning frequency	The number of times an organism spawns.	
SPRD	Sporophyte Production	No definition available.	
SSET	Seed Set (No.	No definition available.	

REP REPRODUCTIVE EFFECT			
	Seeds/No. Florets)		
STRL	Sterility	The inability to reproduce because of congenital or acquired reproductive system disorders involving lack of gamete production or production of abnormal gametes.	
T50P	Time to 50% production	Number of days to achieve 50% egg production.	
TFPG	Time to first progeny	Number of days to produce first litter.	
TMNT	Time to mounting	Time it takes for a reproductive behavior to be exhibited. This includes one animal climbing atop a second animal. Also copulation, intercourse, and mating.	
TPRG	Time to pregnancy/gravidity	Time from mating to first gravidity.	
<TPRD>	Total Production	No definition available.	
TSPN	Time to Spawn	No definition available.	
TTPR	Time to peak reproduction	The time it take for adults to reach peak reproductive output.	
TUPR	Tuber production	Tuber = The enlarged end of a rhizome in which food accumulates, as in potato.	
USTS	Unknown estrus stage	Unknown/undetermined stage of the estrus cycle.	
VAOP	Vaginal opening	A method used to determine puberty in a female organism. Also called vaginal patency.	<a href="http://www.epa.gov/sci/poly/oscpendo/docs/edmvs/femalearrayprotoc0l0830ed02.pdf">http://www.epa.gov/sci/poly/oscpendo/docs/edmvs/femalearrayprotoc0l0830ed02.pdf</a>
VCTY	Velocity	A standard measure of sperm motility, the total distance traveled divided by time.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
VEGR	Vegetative Reproduction	No definition available.	
VIAB	Viable Offspring or Seed	No definition available.	
VITG	Vitellogenesis	The production and storage of yolk in the oocyte which is usually initiated after the first meiotic division.	cancerweb.ncl.ac.uk
VPLG	Vaginal/Copulatory plug	A plug formed by the coagulation of semen; found in the vagina after copulation in certain animals, such as the baboon, rat, and squirrel.	<a href="http://cancerweb.ncl.ac.uk/omd/">http://cancerweb.ncl.ac.uk/omd/</a>

<b>AEG AVIAN EGG EFFECT</b>			
<b>Measurement Code</b>	<b>Measurement Name</b>	<b>Measurement Definition</b>	<b>Notes</b>
ALEG	Albumen Eggshell Quality (Haugh Units)	Haugh Units Scale objectively combines the thickness of the egg albumen and the weight of the egg to a single score that can be compared across all types of eggs.	<a href="http://www.sunnyqueen.com.au/03_quality/quality.htm">http://www.sunnyqueen.com.au/03_quality/quality.htm</a>
BLSP	Blood spots	Also called meat spots. Occasionally found on an egg yolk. Contrary to popular opinion, these tiny spots do not indicate a fertilized egg. Rather, they are caused by the rupture of a blood vessel on the yolk surface during formation of the egg or by a similar accident in the wall of the oviduct. Less than 1% of all eggs produced have blood spots.	<a href="http://www.georgiaeggs.org/pages/bloodspots.html">http://www.georgiaeggs.org/pages/bloodspots.html</a>
BSCP	Basal cap	A roughly circular mass of crystalline material that tips mammillae.	
CRAK	Cracking	No definition available.	
ESIN	Eggshell Index	No definition available.	
FERT	Fertile, Fertility	The quality or state of being fertile.	Webster's Use this effect-measurement pair when the fertility of avian eggs is studied.
LGTH	Length	Measurable change in length of test organism, organ or cell	
LSTE	Eggs lost	Eggs missing from the nest (could be due to parents eating eggs or removing eggs from the nest).	
MMMC	Mammillary core	Structures composed of organic knobs which serve as crystallization sites on the outer surface of eggshell membranes.	
QUAL	Quality	No definition available.	
SHLL	Shell, Percent	No definition available.	
SIZE	Size	The physical magnitude, extent, or bulk : relative or proportionate dimensions.	
SOFT	Softness	No definition available.	
STGH	Strength	The quality or state of being strong, power to resist force.	
THIK	Thickness	Having or being of relatively great depth or extent from one surface to its opposite.	

<b>AEG AVIAN EGG EFFECT</b>			
VIAB	Viable	No definition available.	
VOLU	Volume	The amount of space occupied by a three-dimensional object as measured in cubic units (as quarts or liters) : cubic capacity.	
WDTH	Width	The horizontal measurement taken at right angles to the length.	
WGHT	Weight	The heaviness of an object.	
YOLK	Yolk, Percent	No definition available.	

<b>SYS ECOSYSTEM GROUP</b>
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<b>PRS SYSTEM PROCESSES EFFECT</b>			
<b>Measurement Code</b>	<b>Measurement Name</b>	<b>Measurement Definition</b>	<b>Notes</b>
BGCM	Biogeochemical	Changes in whole system biogeochemical processes, e.g. sulfate reduction, denitrification, methanogenesis, nitrification, ammonification, net N or P removal.	
CMIN	Carbon Mineralization	No definition available.	
CO2G	CO <sub>2</sub> Generation	Carbon dioxide generation in a soil/litter microcosm system.	
CO2P	CO <sub>2</sub> Evolution	No definition available.	
DCMP	Decomposition	Change in rate of degradation of plant material.	
GPPR	Gross Primary Productivity/Respiration	Change in ratio of system-level gross primary productivity to respiration.	
GPRS	System processes, General	General code for ACQUIRE.	
NITR	Nitrification	No definition available.	
NMIN	Net Mineralization	No definition available.	
OUPT	Oxygen uptake	Oxygen uptake in a soil/litter microcosm system.	
PPRO	Primary Productivity	No definition available.	
SPRO	Secondary Productivity	Change in production of consumer level organisms (e.g. macroinvertebrates).	

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PRS SYSTEM PROCESSES EFFECT			
SRES	System Respiration	Change in rate of oxygen uptake by entire ecosystem, as opposed to individual or groups of organisms.	
TROP	Efficiency of Trophic Transfer Between Different Levels in the Food Chain; Assimilation Efficiency	Change in efficiency of trophic transfers between different levels in the food chain, e.g. between primary producers and grazers.	

**NOC No GROUP CODE**

<b>NOC No GROUP CODE EFFECT</b>			
<b>Measurement Code</b>	<b>Measurement Name</b>	<b>Measurement Definition</b>	<b>Notes</b>
MULT	Multiple Effects Reported as One Result	Change in more than one effect when data were reported as one result; this code is used with reservation. The use must be verified through consultation with at least one other reviewer to ensure that the effects can not be reported individually.	
<NONE>	None		
NRNR	Endpoint Reported Without a Specific Effect	The author reported an endpoint, but not a specific effect.. This code is used with reservation. The use must be verified through consultation with at least one other reviewer to ensure that there are no effect reported.	
~XXX [This is an EFFECT code- NOT A MEASURENT CODE]	Delayed Effect	Currently an ACQUIRE ONLY code. An effect (xxx) reported after the organisms are transferred to toxicant-free test chambers. A specific exception is clearance prior to tissue analysis; e.g., "after the exposure the organisms were placed in clean water for 10 hours to allow the organism to clear the stomach contents". This type of clearance is distinguished from depuration and is not coded as a delayed effect (see also page 4.C-10). Refer to Section 4.C-5. <u>Test Result Parameters</u> in the guidelines for additional information regarding coding of delayed effects.	



## Appendix T. Endpoint Codes and Definitions

ECOTOX ENDPOINTS		
DATABASE USAGE	ENDPOINT	DEFINITION
TERRETOX	<b>ATCN</b>	Asymptotic threshold concentration: The concentration of a chemical at which some percentage of a population of test organisms is in a state of approximate homeostasis for some prolonged period of time.
TERRETOX	<b>BAF</b>	Bioaccumulation factor: A value that is the "ratio of the concentration of a chemical in the organism to that in the medium (usually water). Bioaccumulation refers to both uptake of dissolved chemicals from water (bioconcentration) and uptake from ingested food and sediment residues." (Casarett et.al. 1986) For TERRETOX, use BAF to reflect concentration/ accumulation in tissues regardless of whether the author addresses the ratio as BAF or BCF. The use of a BCF code in the TERRETOX database will require prior approval.
AQUIRE	<b>BCF</b>	<p>Bioconcentration factor: A term describing the degree to which a chemical can be concentrated in the tissues of an organism in the <i>aquatic environment</i> as a result of exposure to waterborne chemical at steady state during uptake phase. The BCF is a value which is equal to the concentration of a chemical in one or more tissues of the exposed aquatic organism divided by the average exposure water concentration of a chemical in the test. (Rand 1995)</p> <p>Use BCF only when reported by author for water exposures ie., AQUIRE; if BCF reported for terrestrial organisms/plants code as BAF.</p> <p>BCFs of less than 1 and negative BCF values are suspect and should be looked at by the EPA data base coordinator. Reviewers will code the data and send the paper on to the EPA data base coordinator for review and approval. The BCF's less than 1 are coded as reported by the author and negative BCF values are coded as &lt;1.</p>
AQUIRE	<b>BCFD</b>	Bioconcentration factor calculated using dry weight tissue concentration
TERRETOX AQUIRE	<b>ECxx</b>	Effective concentration for xx% of tested organisms.
TERRETOX AQUIRE	<b>EC100</b>	Effective concentration to 100% of test organisms
AQUIRE	<b>EDxx</b>	Effective dose for xx% of tested organisms
AQUIRE TERRETOX	<b>ERxx</b>	Tissue concentration of toxicant needed to cause xx% effect in the test population. (ECOREF#51644) The ERxx concentration should be coded into the Concentration field and not the BCF field.

<b>ECOTOX ENDPOINTS</b>		
<b>DATABASE USAGE</b>	<b>ENDPOINT</b>	<b>DEFINITION</b>
AQUIRE	<b>ETxx</b>	Effective time response to xx% of organisms. The time associated with the response is coded in the DURATION field.
TERRETOX AQUIRE	<b>ICxx</b>	Inhibition concentration to xx% of organisms.
TERRETOX AQUIRE	<b>IDxx</b>	Inhibition dose to xx% of organisms.
TERRETOX AQUIRE	<b>LCxx</b>	Lethal concentration to xx% of test animals.
TERRETOX AQUIRE	<b>LDxx</b>	Lethal dose to xx% of test animals
AQUIRE	<b>LETC</b>	Lethal Threshold Concentration: Toxicity curve asymptotic concentration indicating an incipient LC50 value. Acute lethal action has essentially ceased.
AQUIRE	<b>LOEC</b>	Lowest observable effect concentration
TERRETOX	<b>LOEL</b>	Lowest-observable-effect-level: lowest dose (concentration) producing effects that were significantly different (as reported by authors) from responses of controls (LOEAL/LOEC)
AQUIRE	<b>LRxx</b>	Lethal Residue Concentration. Tissue concentration of toxicant needed to cause xx% mortality in the test population. (ECOREF#20453) The LRxx concentration should be coded into the Concentration field and not the BCF field.
TERRETOX AQUIRE	<b>LTxx</b>	Lethal time, median: time required for xx% of a population to die from a given dose; also reported as "STxx" - survival time for xx% of a population. The time associated with the response is coded in the DURATION field.
TERRETOX AQUIRE	<b>MATC</b>	Maximum Acceptable Toxicant Concentration: Hypothetical threshold concentration that is the geometric mean between the NOEC and LOEC concentration. The term Chronic Value (ChV) is encoded as MATC. Refer to companion endpoint note under LOEC definition
AQUIRE	<b>NOEC</b>	No observable effect concentration
TERRETOX	<b>NOEL</b>	No-observable-effect-level: highest dose (concentration) producing effects not significantly different from responses of controls according to author's reported statistical test (NOEAL/NOEC)
TERRETOX AQUIRE	<b>NR</b>	Not reported
TERRETOX AQUIRE	<b>NR-LETH</b>	100% mortality

<b>ECOTOX ENDPOINTS</b>		
<b>DATABASE USAGE</b>	<b>ENDPOINT</b>	<b>DEFINITION</b>
TERRETOX AQUIRE	<b>NR-ZERO</b>	0% mortality

NOTE: When coding endpoints with number values (e.g. LCxx) the format to be used for single digit numbers is: 0X (e.g. LC01, LC05).

## Appendix U. Response Site Codes

CODE	Site Name	Site Definition/Notes
<b>A</b>		
AB	Aboveground Portion, Plant	
ABD	Abdomen	1. The portion of the vertebrate body between the thorax and the pelvis or the cavity of this part of the body. 2. The elongate region posterior to the thorax in arthropods.
ABP	Abdominal process	Found in a parthenogenic female cladoceran. A long second abdominal process of the post abdomen that extends beyond the base of the anal setae ( <a href="http://www.epa.gov/waterscience/wet/disk2/pdf/apxal-a3.pdf">www.epa.gov/waterscience/wet/disk2/pdf/apxal-a3.pdf</a> )
AD	Adipose Tissue	A type of connective tissue specialized for lipid storage.
ADC	Auditory center	Area of the brain that detects auditory stimulus
AF	Amniotic Fluid	A substance that fills the amnion to protect the embryo from desiccation and shock.
AG	Accessory Gland	A mass of glandular tissue separate from the main body of a gland.  A gland associated with the male reproductive organs in insects.
AL	Albumen	Egg white

AM	Adductor Muscle	Any muscle that draws a part of the body toward the median axis.
ANG	Antennal Gland	(Green gland) An excretory organ in the cephalon of adult crustaceans
ANT	Antenna (Antennae)	A movable, articulated organ of sensation, attached to the heads of insects and Crustacea. There are two in the former, and usually four in the latter. They are used as organs of touch, and in some species of Crustacea the cavity of the ear is situated near the basal joint. In insects, they are popularly called horns, and also feelers. The term is also applied to similar organs on the heads of other arthropods and of annelids. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
AO	Anogenital	Pertaining to the anus and external genitals.
AP	Appendages	Any subordinate or nonessential structure associated with a major body part. Any jointed, peripheral extension, especially limbs, or arthropod and vertebrate bodies.
AR	Adrenal Gland	An endocrine organ located close to the kidneys of vertebrates and consisting of two morphologically distinct components, the cortex and medulla.
ART	Artery	A vascular tube that carries blood away from the heart.

AS	Air Sac	One of large, thin-walled structures associated with the tracheal system of some insects. In birds, any of the small vesicles that are connected with the respiratory system and located in bones and muscles to increase buoyancy.
AT	Alimentary Tract	Pertaining to the organs of digestion
ATA	Aorta	The largest artery in the body which has its origin at the heart. It gives off branches to the extremities, neck and major organs for the purpose of supplying oxygenated blood. (Gray's)
ATH	Abdomen and thorax	Sample consists of abdomen and thorax tissue.
ATM	Atrium	The chamber or either of the chambers of the heart that receives blood from the veins and forces it into the ventricle or ventricles Webster's
AX	Axons	The process or nerve fiber of a neuron that carries the unidirectional nerve impulse away from the cell body.
<b>B</b>		
BA	Bark	
BB	Bulb	
BC	Buccal mass	
BCT	Bract	A leaf-like structure, different from the foliage leaves and without an auxiliary bud, associated with an inflorescence or flower (Gray's)

BD	Bud	An embryonic shoot containing the growing stem tip surrounded by young leaves or flowers or both and frequently enclosed by bud scales.
BDW	Body wall	Consists of the layers of tissue, including skin, connective tissue, and hypaxial muscle, which surround and contain the internal structures of the body
BI	Bile	An alkaline fluid secreted by the liver and delivered to the duodenum to aid in the emulsification, digestion, and absorption of fats.
BDT	Bile duct	A duct that carries bile from the liver and gallbladder to the duodenum (first part of the small intestine). ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
BIL	Bill	
BIT	Biliary tract	The biliary tract is a system of ducts that transports bile out of the liver into the small intestine ( <a href="http://arbl.cvmbs.colostate.edu/hbooks/pathphys/digestion/liver/anatomy.html">http://arbl.cvmbs.colostate.edu/hbooks/pathphys/digestion/liver/anatomy.html</a> )
BK	Beak	A prominent terminal projection.
BL	Blood	A fluid connective tissue consisting of the plasma and cells that circulate in the blood vessels.
BLC	Blood cells	An erythrocyte (red blood cell) or leukocyte (white blood cell)
BM	Bone Marrow	A vascular modified connective tissue occurring in the long bones and certain flat bones of vertebrates.
BMC	Bone marrow cells	Cells found in the bone marrow

BMP	Bone marrow plasma	Plasma from the bone marrow.
BO	Bone	One of the parts constituting a vertebrate skeleton.
BOD	Body use WO	
BOL	Bolls	A pod or capsule, as of cotton and flax.
BR	Brain	The portion of the vertebrate central nervous system enclosed in the skull.
BRN	Branches	
BRS	Brain stem	
BT	Breast	
BU	Bursa	A simple sac or cavity with smooth walls containing a clear, slightly sickly fluid and interposed between two moving surfaces of the body to reduce friction.
BV	Blood Vessel	A tubular channel for blood transport.
BW	Bee's Wax	Yellow to grayish-brown solid wax obtained from bee honeycombs by boiling and straining..
BY	Byssus	
<b>C</b>		



CA	Cartilage	A specialized connective tissue which is bluish, translucent, and hard but yielding.
CAE	Caecum	The blind end of a cavity, duct, or tube, especially the sac at the beginning of the large intestine.
CAN	Canopy	The uppermost spreading branchy layer of a forest.
CAP	Cap, Mushroom	The convex, concave, or flattened spore-bearing structure of some basidiomycetes that is attached superiorly to the stem and typically is expanded with gills or pores on the underside -- called also pileus.
CB	Cob	1 : the axis on which the kernels of Indian corn are arranged. 2 : an ear of Indian corn .
CBC	Cerebral cortex	The outer portion of the brain, consisting of layers of nerve cells and the pathways that connect them. The cerebral cortex is the part of the brain in which thought processes take place. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
CBH	Cerebral hemisphere	The two halves of the cerebrum, the largest part of the brain.
CBM	Cerebrum	An enlarged anterior or upper part of the brain; especially : the expanded anterior portion of the brain that in higher mammals overlies the rest of the brain, consists of cerebral hemispheres and connecting structures, and is considered to be the seat of conscious mental processes
CC	Cocoon	A protective case formed by the larvae of many insects, in which they pass the pupa stage.

CCM	Cecum	the blind pouch at the beginning of the large intestine into which the ileum opens from one side and which is continuous with the colon (www.m-w.com)
CDB	Caudal Bone	
CDV	Caudal vertebrae	The vertebrae that form the skeleton of the tail. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
CE	Coelomic fluid	
CEL	Cell	The microscopic functional and structural unit of all living organisms.
CG	Cloacal gland	Any of the sweat glands in the cloaca of lower invertebrates, as snakes or amphibians.
CGG	Coagulating gland	Also known as the dorsal prostate, responsible for formation of a copulatory vaginal plug - preventing backflow of deposited semen ( <a href="http://www.uwyo.edu/wjm/repro/maleanat.htm">http://www.uwyo.edu/wjm/repro/maleanat.htm</a> )
CRG	Cerebral ganglion	
CH	Spinal Cord,	The cordlike posterior portion of the central nervous system contained within the spinal canal of the vertebral column of all vertebrates.
CHO	Chorion	Protective membrane around the eggs of insects and fishes. Extraembryonic membrane surrounding the embryo of amniote vertebrates. The outer epithelial layer of the chorion is derived from the tropoblast. (cancerweb.ncl.ac.uk)

CHP	Choroid plexus	Organ found within the ventricles of the brain and in the subarachnoid space around the brain and spinal cord that produces cerebrospinal fluid ( <a href="http://www.ets.uidaho.edu/med532/choroid.htm">http://www.ets.uidaho.edu/med532/choroid.htm</a> )
CIL	Cilia	Relatively short, centriole-based, hairlike processes on certain anatomical cells and motile organisms.
CL	Claw	
CLM	Coelomocytes	A corpuscle, including amebocytes and eleocytes, in the coelom of certain animals, especially annelids.
CLN	Colon	The part of the large intestine that extends from the cecum to the rectum
CLT	Clitoris, Clitoral gland	a small erectile organ at the anterior or ventral part of the vulva homologous to the penis Webster's
CLV	Calvarium	the portion of the skull including the braincase and excluding the lower jaw and facial portion
CM	Crown to Rump	
CMB	Comb	a fleshy crest on the head of the domestic fowl and other gallinaceous birds Webster's
CN	Cotyledon	The first leaf of the embryo of seed plants.
CO	Collagen	A fibrous protein found in all multicellular animals, especially in connective tissue.
COL	Coleoptile	The first leaf of a monocotyledon seedling.

COR	Corm	A short, erect, fleshy underground stem, usually broader than high and covered with membrane scales.
COS	Corpuscles of Stannius	These are islands of eosinophilic granular cells located in paired organs on the ventral surface of the kidney. This organ secretes a protein called hypocalcin (teleocalcin) which acts with calcitonin to regulate calcium metabolism. ( <a href="http://www.afip.org/vetpath/POLA/POLA96/fish.txt">http://www.afip.org/vetpath/POLA/POLA96/fish.txt</a> )
CP	Capat	
CPS	Carpus	The joint, or the region of the joint, between the hand and the arm. The wrist.
CPT	Chloroplast	The photosynthetic organelle of higher plants.
CR	Crop	1) A plant or animal grown for it commercial value. 2) A distensible saccular diverticulum near the lower end of the esophagus of birds which serves to hold and soften food before passage into the stomach.
CRB	Cerebellum	Part of the vertebrate hindbrain, concerned primarily with somatic motor function, the control of muscle tone and the maintenance of balance.
CRI	Cervical rib	A rib which arises from the seventh cervical vertebrae (above the normal first rib). Occurs in only about 0.5% of people. May cause nerve and artery problems. (Gray's)
CRM	Cerebrum	The portion of the brain (frontal lobes) where thought and higher function reside.

CRP	Carapace	A dorsolateral, chitinous case covering the cephalothorax of many arthropods.
CRR	Cerebellar region	
CS	Chromosome	Any of the complex, threadlike structures seen in animal and plant nuclei during kariokinesis which carry the linearly arranged genetic material.
CSF	Cerebrospinal fluid	a clear liquid which is very similar to the liquid portion of blood(plasma) and contains various salts and products such as sodium, calcium, bicarbonate, chloride, magnesium and glucose. The purpose of the CSF is as a medium for the transport of the chemicals to and from the brain, and also to provide buoyancy and protection for the brain.
CST	Cisternae	Membrane bounded saccules of the smooth and rough endoplasmic reticulum and Golgi apparatus.
CT	Cephalothorax	the body division comprising the united head and thorax of arachnids and higher crustaceans
CTE	Ctenidium	The comb or featherlike respiratory apparatus of certain mollusks or a row of spines on the head or thorax of some fleas (MHSD)
CU	Culture Cells	
CUT	Cuticle	A layer of more or less solid substance which covers the free surface of an epithelial cell.
CV	Caudal Vertebra	Any of the small bones of the vertebral column that support the tail in vertebrates.

CVV	Cervical vertebrae	The seven segments of the vertebral column located in the neck. Synonym: vertebrae cervicales ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
CVM	Calvarium	One of the bones that makes up the vault of the skull (in humans these are the frontal, 2 parietals, occipital and 2 temporals). (Gray's)
CVX	Cervix	the narrow outer end of the uterus
CX	Caudex	The main axis of a plant, including stem and roots.
CY	Cytosol	The fluid portion of the cytoplasm, that is, the cytoplasm exclusive of organelles and membranes.
CYT	Cytoplasm	The organized complex of inorganic and organic substances external to the nuclear membrane of a cell and including the cytosol and membrane-bound organelles (as mitochondria or chloroplasts)
<b>D</b>		
DG	Digestive Gland	Any structure that secretes digestive enzymes.
DN	Diencephalon	In vertebrate CNS the most rostral part of the brainstem, consisting of the thalamus, hypothalamus, subthalamus and epithalamus. It is a key relay zone for transmitting information about sensation and movement and also contains (in the hypothalamus) important control mechanisms for homeostatic integration.
DO	Duodenum	
DT	Digestive Tract	The alimentary canal.
<b>E</b>		

EA	Ear (Corn or Rice)	
EAL	Ear leaf (Corn)	
EC	Excreta	Excretion products; waste materials excreted by the body.
ED	Endometrium	The tissue lining the uterus, it is sloughed off during the woman's menstrual period, and afterward grows back and slowly gets thicker and thicker until the next period. (cancerweb.ncl.ac.uk)
EG	Egg	Ova
EL	Elytrom	
EM	Embryo	1) In animals, those derivatives of the fertilized ovum that eventually become the offspring during their period of most rapid development. 2) In plants, the element of the seed that develops into a new individual.
EMS	Embryonic shoot cells	
EN	Entrails	
EO	Endothelium	A layer of epithelium that lines the heart, blood vessels (ENDOTHELIUM, VASCULAR), lymph vessels (ENDOTHELIUM, LYMPHATIC), and the serous cavities of the body.
EP	Endoplasmic Reticulum	A vacuolar system of the cytoplasm in differentiated cells that functions in protein synthesis and sequestration.

EPD	Epididymis	A system of ductules emerging posteriorly from the testis that holds sperm during maturation and that forms a tangled mass before uniting into a single coiled duct which is continuous with the vas deferens
ER	Erythrocyte	Red blood cell.
ES	Esophagus	The tubular portion of the alimentary canal interposed between the pharynx and the stomach.
ET	Edible Tissue	
EU	Egg Cuticle	
EV	Exuviae	
EX	Exoskeleton	The external supportive covering of certain invertebrates, such as arthropods.
EY	Eye	
EYS	Eyestalk	One of the moveable peduncles bearing an eye at the tip in a decapod crustacean (Merriam-Webster)
EZ	Enzyme	Any of a group of catalytic proteins that are produced by living cells and that mediate and promote the chemical processes of life without themselves being altered or destroyed.
<b>F</b>		
F1	F1 Generation	the immediate offspring of a parent generation
FAC	Face	The part of the head in which the eyes, cheeks, nose, and mouth are situated. (Gray's)



FB	Frontal Bone	Of or pertaining to the forehead or the anterior part of the roof of the brain case; as, the frontal bones.
FBR	Forebrain	The anterior of the three primary divisions of the developing vertebrate brain or the corresponding part of the adult brain that includes especially the cerebral hemispheres, the thalamus, and the hypothalamus and that especially in higher vertebrates is the main control center for sensory and associative information processing, visceral functions, and voluntary motor functions -- called also prosencephalon Webster's
FC	Feces	The waste material eliminated by the gastrointestinal tract.
FD	Frond	The leaf of a palm or fern.
FE	Feathers	
FG	Foregut	The anterior part of the alimentary canal of a vertebrate embryo that develops into the pharynx, esophagus, stomach, and extreme anterior part of the intestine
FI	Fin	A paddle-shape appendage on fish and other aquatic animals that is used for propulsion, balance, and guidance.
FIB	Fibula	A long bone in the lower leg that is adjacent to the tibia. The fibula supports approximately 1/6th of the body weight and produces the lateral (outer) prominence of the ankle. ( <a href="http://cancerweb.ncl.ac.uk/cgi-bin/omd?fibula">http://cancerweb.ncl.ac.uk/cgi-bin/omd?fibula</a> )
FL	Fillet	A boneless slice of meat or fish.
FLB	Flower Bud	

FLW	Flower/ Inflorescence	
FM	Femur	The proximal bone of the hind or lower limb in vertebrates.
FMD	Femur diaphysis	The shaft of the femur. (Gray's)
FMM	Femur metaphysis	A conical section of the femur between the epiphysis (area where growth occurs) and diaphysis (the shaft of the bone). (Gray's)
FO	Foot	
FOD	Fodder	
FOL	Foliage	The aggregate of leaves of one or more plants.(MW on-line)
FOR	Forage	A vegetable food for domestic animals.
FP	Fatpad	
FR	Fruit	A fully matured plant ovary with or without other floral or shoot parts united with it at maturity.
FRL	Forelimb	A front limb of a quadruped. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
FX	Frontal cortex	Cortex of the frontal lobe of the cerebral hemisphere, originally, the entire cortical expanse anterior to the central sulcus, including the agranular motor and premotor cortex (Brodman's areas 4 and 6), the dysgranular cortex (area 8), and the granular frontal (prefrontal) cortex anterior to the latter, now more often refers to the granular frontal (prefrontal) cortex.

<b>G</b>		
GA	Granum (plural grana)	Stack of thylakoids in the chloroplast, containing the light harvesting system and the enzymes responsible for the light dependent reactions of photosynthesis. (cancerweb.ncl.ac.uk)
GB	Gall Bladder	A hollow, muscular organ in vertebrates which receives dilute bile from the liver, concentrates it, and discharges it into the duodenum.
GF	Green forage	
GG	Green Gland	(antennal gland) An excretory organ in the cephalon of adult crustaceans
GI	Gills	The respiratory organ of water-breathing animals. (Also branchia)
GC	Gland Complex	
GL	Ganglion	A mass of nerve tissue containing nerve cells external to the brain or spinal cord.
GMT	Germ tube	
GNP	Genital papillae	Tactile or sensory organs located near genitalia as raised bumps or nipples on a tissue surface
GNT	Gnathopod	A gnathopodite or maxilliped which is any leglike appendage of a crustacean, when modified wholly, or in part, to serve as a jaw, especially. (cancerweb.ncl.ac.uk)
GO	Gonads	A primary sex gland; an ovary or a testis.

GOL	Golgi Apparatus	A cellular organelle that is part of the cytoplasmic membrane system; it is composed of regions of stacked cisternae and it functions in secretory processes.
GP	Gills+Palps	
GPD	Gonopodium	the pelvic fins of male fish that have been converted into genital organs. ( <a href="http://www.exotictropicals.com/encyclo/information/aquarium_glossary.htm">http://www.exotictropicals.com/encyclo/information/aquarium_glossary.htm</a> )
GR	Grain	
GS	Germinated seed	
GT	Gastrointestinal Tract	The stomach and intestine.
GU	Gut	The intestine. The embryonic, digestive tube.
GZ	Gizzard	The muscular portion of the stomach of most birds where food is ground with the aid of ingested pebbles.
<b>H</b>		
HA	Hair	A threadlike outgrowth of the epidermis of animals.
HYA	Hyalinocyte	A type of nongranular leukocyte ( <a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a> ).
HAP	Haptonema	Filament extending between the paired flagella of certain unicellular algae (haptophytes). Supported by 6 or 7 microtubules (not in an axoneme like array) and apparently used for capturing prey in a manner analogous to the axopodia of heliozoa.
HAY	Hay	Hay
HB	Hindbrain	The posterior of the three principal divisions of the brain, including the epencephalon and metencephalon. Sometimes restricted to the epencephalon only.( <a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a> )

HC	Hypocotyl callus cells	
HD	Head	
HDG	Hindgut	The posterior part of the alimentary canal Webster's
HE	Heart	
HIP	Hippocampus	A curved elongated ridge that extends over the floor of the descending horn of each lateral ventricle of the brain and consists of gray matter covered on the ventricular surface with white matter Webster's
HKG	Husk and grain	
HL	Hemolymph	The circulating fluid of the open circulatory systems of many invertebrates.
HLB	Hindlimb	Either of two extremities of four-footed non-primate land animals. It usually consists of a femur, tibia and fibula, tarsals, metatarsals, and toes. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
HM	Humerus	The proximal bone of the forelimb in vertebrates.
HMC	Hemocyte	A cellular element of blood, especially in invertebrates.
HMG	Hemoglobin	Four subunit globular oxygen carrying protein of the erythrocytes of vertebrates and some invertebrates.( <a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a> ). Also spelled Haemoglobin.
HO	Honey	The sweet, viscous secretion composed principally of levulose and dextrose that is deposited in the honeycomb by the honeybee.
HOD	Hyoid	Of or pertaining to the bony or cartilaginous arch which supports the tongue (Gray's).
HP	Hepatopancreas	A gland in crustaceans and certain other invertebrates that combines the digestive functions of the liver and pancreas of vertebrates.
HSK	Husk	
HTC	Heterocyst	Clear, thick-walled cell occurring at intervals along the filament of certain blue-green algae.

HTG	Hatching gland	A transversely oriented set of cells located deep to the enveloping layer on the pericardial membrane, especially during the pharyngula period because of the brightly refractile cytoplasmic granules containing hatching enzymes in the cells. ( <a href="http://www.purethrottle.com/briancoad/Dictionary/H.html">http://www.purethrottle.com/briancoad/Dictionary/H.html</a> )
HY	Hypothalamus	The floor of the third brain ventricle; site of production of several substances that act on the adenohypophysis.
HYA	Hypha	Also known as Hyphae or Hyphal. One of the threads that make up the mycelium of a fungus, increase by apical growth, and are coenocytic or transversely septate Webster's
HYD	Hypodermis	1. The outermost cell layer of the cortex of plants, aka exodermis. 2. The layer of cells that underlies and secretes the cuticle in arthropods and other invertebrates.
HYP	Hypocotyl	The portion of the embryonic plant axis below the cotyledon.
<b>I</b>		
IB	Interparietal Bone	Between the parietal bones or cartilages; as, the interparietal suture.
IE	Ileum	The last portion of the small intestine that communicates with the large intestine.
IL	Ilium	The dorsal, upper, and largest one of the three bones composing either lateral half of the pelvis.
IN	Intestinal Tract	
INC	Inclusions	The residual elements of the cytoplasm that are metabolic products of the cell e.g. pigment granules or crystals.
IR	Interrenal gland	
IT	Internode	The interval between two nodes, as on a stem or along a nerve fiber.
<b>J</b>		
JA	Jaw	Either of two bones forming the skeleton of the mouth of vertebrates. Also known as mandible.

JE	Jejunum	The section of the small intestine that comprises the first two fifths beyond the duodenum and that is larger, thicker-walled, and more vascular and has more circular folds than the ileum Webster's
JV	Juvenile	Physiologically immature or undeveloped lifestage.
<b>K</b>		
KI	Kidney	Either of a pair of organs involved with the elimination of water and waste products from the body of vertebrates.
KIL	Kidney, left	Either of a pair of organs involved with the elimination of water and waste products from the body of vertebrates.
KIR	Kidney, right	Either of a pair of organs involved with the elimination of water and waste products from the body of vertebrates.
KR	Kernal	A whole grain or seed of a cereal plant, such as corn or barley.
<b>L</b>		
LAM	Laminae	the expanded part of a foliage leaf
LC	Leaf chloroplast	A type of cell plastid occurring in the green parts of plants, containing chlorophyll pigments, and functioning in photosynthesis and protein synthesis.
LD	Lipid, Fat	One of a class of compounds which contain long-chain aliphatic hydrocarbons and their derivatives; includes waxes, fats, and derived compounds.
LE	Leaf /Needle	
LEI	Leaf Index	

LEN	Lens	
LEO	Leaf, Old	
LEU	Leukocytes	Also known as white blood cells. White corpuscles in the blood. They are spherical, colorless and nucleated masses involved with host defenses. (cancerweb.ncl.ac.uk)
LEY	Leaf, Young	
LG	Leg	
LI	Liver	A large vascular gland in the body of vertebrates consisting of a continuous parenchymal mass covered by a capsule; secretes bile, manufactures certain blood proteins and enzymes, and removes toxins from the systemic circulation.
LIM	Liver microsomes	In the hepatocyte, any of the vesicular fragments of endoplasmic reticulum formed after disruption and centrifugation of cells. (Gray's)
LIN	Large intestine	the more terminal division of the vertebrate intestine that is wider and shorter than the small intestine, typically divided into cecum, colon, and rectum, and concerned especially with the resorption of water and the formation of feces
LIP	Lip	Either of the two fleshy folds which surround the orifice of the month. (Websters Dictionary)
LIT	Litters	Offspring
LM	Limb	1) An extremity or appendage used for locomotion or prehension. 2) A large primary tree branch
LMP	Lymphocyte	White cell of the blood that are derived from stem cells of the lymphoid series. (http://cancerweb.ncl.ac.uk)



LMV	Lumbar vertebrae	The vertebrae, usually five in number, located in the lumbar region of the back. Synonym: vertebrae lumbales. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
LMW	Low Molecular Weight Biomolecules (e.g., amino acids).	Specifically: Amino acids, Organic acids and monosaccharides (ECOREF#89645)
LN	Lymph node	Small, bean-shaped organs located throughout the lymphatic system. The lymph nodes store special cells that can trap cancer cells or bacteria that are traveling through the body in lymph. Also called lymph glands.
LP	Labial Palps	1) Either of a pair of fleshy appendages on either side of the mouth of certain bivalve mollusks. 2) A jointed appendage attached to the labium of certain insects.
LU	Lungs	Either of the paired air-filled sacs which function as organs of respiration.
LV	Left ventricle	The muscular chamber of the heart which accepts blood from the left atrium and ejects it into the aorta to the systemic circulation. ( <a href="http://www.graylab.ac.uk/cgi-bin/omd?left+ventricle">http://www.graylab.ac.uk/cgi-bin/omd?left+ventricle</a> )
LYS	Lysosome	A specialized cell organelle surrounded by a single membrane and containing a mixture of hydrolytic (digestive) enzymes.
<b>M</b>		
MA	Mantle	An enveloping layer, as the external body wall lining the shell of many invertebrates, or the external meristematic layers in a stem apex.
MB	Muscle+Bone	
MBR	Midbrain	The part of the brain above the pons and below the thalamus, it is the uppermost part of the brainstem, and is involved in basic, unconscious body function. (Gray's)
MC	Microsome	A fragment of the endoplasmic reticulum. A minute granule of protoplasm.

ME	Meristem (apical or axillary)	Meristem - Formative plant tissue composed of undifferentiated cells capable of dividing and giving rise to other meristemic cells as well as specialized cell types.
MES	Mesentery	The membranes, or one of the membranes (consisting of a fold of the peritoneum and enclosed tissues), which connect the intestines and their appendages with the dorsal wall of the abdominal cavity. The mesentery proper is connected with the jejunum and ileum, the other mesenteries being called mesocum, mesocolon, mesorectum, etc. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
MI	Midgut and Midgut Gland	The middle portion of the digestive tube in vertebrate embryos.
MIT	Mitochondria	Minute cytoplasmic organelles in the form of spherical granules, short rods, or long filaments found in almost all living cells.
MK	Milk, lactating females	
MM	Mammary Tissue	
MO	Mucous	A viscid fluid secreted by mucus glands
MOB	Medulla oblongata	The lowest subdivision of the brainstem, immediately adjacent to the spinal cord. Houses important cardiac and respiratory regulatory centres.
MOM	Mother cells, pollen	

MR	Membrane	A thin layer of tissue surrounding a part of the body, separating adjacent cavities, lining cavities, or connecting adjacent structures.
MRC	Motor cortex	Area of the frontal lobe concerned with primary motor control. It lies anterior to the central sulcus. ( <a href="http://cancerweb.ncl.ac.uk/cgi-bin/omd?motor+cortex">http://cancerweb.ncl.ac.uk/cgi-bin/omd?motor+cortex</a> )
MS	Mesenteric Lymph Node	
MSI	Mucosa of the Small Intestines	The mucous coat of the small intestine.
MSC	Mesencephalon	The middle segment of the brain; the midbrain.
MT	Multiple Tissue/ Organs	AQUIRE code. Used when multiple sites are coded for one record. The individual sites are reported as a REMARK. This code will be changed to MUL at a later date.
MTC	Metacarpus	The part of the hand or forefoot that contains the metacarpals.
MTM	Mentum	The front median plate of the labium in insects ( <a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a> )
MU	Muscle	A tissue composed of cells containing contractile fibers; three types are smooth, cardiac, and skeletal.
MUL	Multiple Sites	
MV	Microvilli	One of the filiform processes that form a brush border on the surfaces of certain specialized cells, such as intestinal epithelium.

MYC	Mycellium	Mass of interwoven filamentous hyphae that forms especially the vegetative portion of the thallus of a fungus.
MYM	Myometrium	Uterine smooth muscle.(cancerweb.ncl.ac.uk)
<b>N</b>		
NAC	Nucleus accumbens	The largest neuronal nucleus in the septal region of the diencephalon in the brain. (Gray's)
NB	Nasal Bone	Either of two small elongated rectangular bones that together form the bridge of the nose.
NC	Nerve Cord	a hollow tube that runs beneath the dorsal surface of the animal above the notochord (the principle nerve cord in the invertebrates, by contrast, is almost always located near the ventral surface
ND	Nodule, root	A bulbous enlargement found on roots of legumes and certain other plants, whose formation is stimulated by symbiotic, nitrogen-fixing bacteria that colonize the roots.
NE	Nervous Tissue	The nerve cells and neuroglia of the nervous system.
NG	Nasal Gland	
NI	Nipple	The protuberance through which milk is drawn from the breast or mamma; the mammilla; a teat; a pap.
NK	Neck	A constricted portion, such as the part connecting the head and trunk of the body.

NL	Needle	A slender-pointed leaf, as of the firs and other evergreens.
NR	Not Reported	
NU	Nuclei	
NVL	Navel	A mark or depression in the middle of the abdomen; the umbilicus. (Gray's)
NY	Nymph	Any of various immature insects; especially : a larva of an insect with incomplete metamorphosis that differs from the adult especially in size and in its incompletely developed wings and genitalia.
<b>O</b>		
OC	Oocyte	An egg before the completion of maturation
OD	Oviduct	A tube that serves to conduct ova from the ovary to the exterior or to an intermediate organ such as the uterus (Fallopian tube)
OF	Orifice	an opening (as a vent, mouth, or hole) through which something may pass Webster's
OG	Organ	A differentiated structure of an organism composed of various cells or tissues and adapted for a specific function.
OL	Olfactory	Pertaining to olfaction, or the sense of smell.
OPR	Operculum	
OR	Organelle	A specialized subcellular structure, such as mitochondrion, having a special function.
OS	Osphradium	in Littorina; an organ capable of sensing chemical changes in the environment
OTO	Otoliths	A calcareous concretion on the end of a sensory hair cell in the vertebrate ear and in some invertebrates.
OV	Ovaries	A glandular organ that produces hormones and give rise to ova in female vertebrates.
<b>P</b>		
PA	Palps	Any of various sensory, usually fleshy appendages near the oral aperture of certain invertebrates.
PAN	Panicle	A branched or compound raceme in which the secondary branches are often racemose as well.

PB	Pseudobranch	
PBD	Projectile body	A body projected through cell membranes.
PC	Pyloric ceca	1) One of the tubular pouches that open into the vermiculus of an insect. 2) One of the paired tubes having lateral glandular diverticula in each ray of a starfish. 3) One of the tubular pouches that open from the pyloric end of the stomach into the alimentary canal of most fishes.
PD	Pod	
PE	Penis	The male organ of copulation in vertebrates. Also known as phallus.
PEP	Pecten epipharyngis	
PES	Petiole and Stem	Both the a slender stem that supports the blade of a foliage leaf and the main trunk of a plant or a primary plant axis that develops buds and shoots instead of roots
PF	Pseudofeces	
PG	Prostate Gland	A gland in the male which surrounds the neck of the bladder and the urethra. The prostate contributes to the seminal fluid.
PGL	Preening gland	A relatively large, compact bilobed secretory organ located at the base of the tail (uropygium) of most birds having a keeled sternum. Also known as oil gland or uropygial gland. (McGraw-Hill)
PHG	Pheromone gland	A gland that secretes a chemical stimulant/attractant that is released into the surrounding environment, either air or water.
PHL	Phalanges	The finger bones ( <a href="http://cancerweb.ncl.ac.uk/cgi-bin/omd?phalanges">http://cancerweb.ncl.ac.uk/cgi-bin/omd?phalanges</a> )
PI	Pituitary Gland	(hypophysis) An epithelial body located at the base of the brain. Consists of two lobes. Secretes hormones.
PL	Plasma	The fluid portion of blood or lymph.
PLA	Platelet	A discoid cell (3m diameter) found in large numbers in blood, important for blood coagulation and for haemostasis by repairing breaches (small breaks) in the walls of blood vessels. ( <a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a> )

PLC	Placenta	1) A vascular organ that unites the fetus to the wall of the uterus. 2) A plant surface bearing a sporangium.
PLL	Pellicle	The outer membrane of protozoans.
PLN	Popliteal nodes	Two groups of nodes located in the popliteal fossa: the superficial popliteal lymph nodes, located around the termination of the small saphenous vein, that drain the skin of the back of the leg and lateral side of the foot; and the deep popliteal lymph nodes, located around the popliteal vessels, that drain the superficial group, the deep structures of the leg, and the knee joint. Also, Popliteal lymph node, nodi lymphatic popliteales
PLP	Pulp	the soft, succulent part of a fruit usually composed of mesocarp (MW)
PLT	Palate	The roof of the mouth. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
PLV	Pelvis	The pelvis is a basin shaped cavity bordered by the pelvic girdle and sacrum, containing and protecting the bladder, rectum and reproductive organs. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
PLY	Polysaccharide	Polymers of (arbitrarily) more than about ten monosaccharide residues linked glycosidically in branched or unbranched chains. ( <a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a> )
PM	Pons + Medulla	A rounded eminence off the ventral surface of the brainstem (pons) and the lowest subdivision of the brainstem, immediately adjacent to the spinal cord (medulla). (Gray's)
PNG	Pineal gland	A small, flat gland found within the brain which produces the hormones melatonin and serotonin. ( <a href="http://cancerweb.ncl.ac.uk">cancerweb.ncl.ac.uk</a> )
PO	Pollen, pollen grain	
PPG	Preputial gland	A small scent gland in the human male which secretes the smegma. Also known as Tyson's gland. (McGraw-Hill)
PR	Proventriculus	1) A sac anterior to the gizzard in earthworms. 2) The true stomach of a bird, usually separated from the gizzard by a constriction.

PRC	Pericardium	A double membranous sac which envelops and protects the heart. The layer in contact with the heart is referred to as the visceral layer, the outer layer in contact with surrounding organs is the parietal pericardium. In between the two layers is the pericardial space. (cancerweb.ncl.ac.uk)
PRF	Particulate fraction	
PRG	Progeny	Offspring, descendants
PRO	Protein	Any of a group of complex organic compounds which contain carbon, hydrogen, oxygen, nitrogen and usually sulphur, the characteristic element being nitrogen and which are widely distributed in plants and animals. Proteins, the principal constituents of the protoplasm of all cells, are of high molecular weight and consist essentially of combinations of amino acids in peptide linkages. (cancerweb.ncl.ac.uk)
PRT	Peritoneum	also peritoneum. The smooth serous membrane which lines the cavity of the abdomen, or the whole body cavity when there is no diaphragm, and, turning back, surrounds the viscera, forming a closed, or nearly closed sac (Grey on-line medical Dictionary)
PS	Pancreas	A composite gland in most vertebrates that produces and secretes digestive enzymes, as well as at least two hormones, insulin and glucagon.
PSG	Plastoglobuli	Globules found in plastids, containing principally lipid, including plastoquinone. (cancerweb.ncl.ac.uk)
POS	Pod + Seed	
PT	Petioles	The stem which supports the blade of a leaf.
PTB	Parietal Bone	The side bone of the skull.
PTG	Parotid gland	A salivary gland situated in front of and below the ear. (Gray's)
PTU	Plant, Unspecified	



PU	Pollen tube	The tube produced by the wall of a pollen grain which enters the embryo sac and provides a passage through which the male nuclei reach the female nuclei.
PV	Perivitelline space	The space between the vitelline membrane and the zona pellucida, appearing in an ovum immediately following fertilization. (cancerweb.ncl.ac.uk)
PX	Pharynx	A chamber at the oral end of the vertebrate alimentary canal, leading to the esophagus.
PYR	Pyrenoid	A Small body found within some chloroplasts, that may contain protein. In green algae may be involved in starch synthesis.
<b>R</b>		
RA	Radius	One of two bones which constitute the forearm. The largest portion of the radius is at the wrist joint where it articulates with the carpal bones of the hand. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
RAC	Rachis	Elongated axis of an inflorescence.
RAD	Radius, distal	One of two bones which constitute the forearm situated away from the point of attachment or origin. The largest portion of the radius is at the wrist joint where it articulates with the carpal bones of the hand. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
RB	Rib	One of the curved bones attached to the vertebral column and supporting the lateral walls of the thorax. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
RBC	Erythrocytes	A type of blood cell that contains a nucleus in all vertebrates but humans and that has hemoglobin in the cytoplasm also known as red blood cell or corpuscle.
RC	Rectum	The portion of the large intestine between the sigmoid flexure and the anus.
RD	Radicle	
RG	Rectal gland	In Sharks: rectal gland is a highly specialized organ whose only function is to pump salt
RH	Rhizome	An underground horizontal stem, often thickened and tuber-shaped, and processing buds, nodes, and scale-like leaves.

RL	Root, Lateral	
RLP	Root, Primary lateral	
RLS	Root, Secondary lateral	
RM	Retractor Muscle	A muscle that draws a limb or other body part toward the body.
RO	Root	The absorbing and anchoring organ of a vascular plant; it bears neither leaves nor flowers and is usually subterranean.
ROC	Root Cortex	
ROE	Root, epidermis	
ROI	Root, Inner cortex	
ROO	Root, Outer cortex	
ROS	Root, Stele	The arrangement of vascular bundles in roots
RP	Root, Primary	
RPP	Renal papilla	The apex of a renal pyramid that projects into a minor calyx; some 10 to 25 openings of papillary ducts occur on its tip, forming the area cribrosa. (Gray's)
RR	Residual, Remnant, Carcass	

RS	Root + Stem	
RT	Reproductive Tissue	
RTC	Root tip cells	
RTP	Root tips	Terminal end of a root.
RU	Radius-Ulna	
RV	Right Ventricle	The muscular chamber of the heart which accepts blood from the right atrium and pumps it through the pulmonary artery into the lungs.
RZ	Root + Rhizome	
<b>S</b>		
SA	Salt Gland	A compound tubular gland, located around the eyes and nasal passages in certain marine turtles, snakes, and birds, which copiously secretes a watery fluid containing a high percentage of salt.
SAP	Sap	The fluid part of a plant; specifically: a watery solution that circulates through
SB	Shell, Membrane	
SB2	Stem/Stalk, Lower Half	
SC	Scale	1) A flat calcified or cornified platelike structure on the skin of most fishes and of some tetrapods. 2) The bract of a catkin.

SCH	Starch	Storage carbohydrate of plants.
SCM	Scrotum	the external pouch that in most mammals contains the testes Webster's
SCP	Scapula	A large, flat, triangular bone that forms the posterior portion of the shoulder. It articulates with the clavicle (at the acromion process) and the humerus (at the glenoid). ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
SCV	Sacral vertebrae	The segments of the vertebral column, usually five in number, that fuse to form the sacrum. Synonym: vertebrae sacrales. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
SD	Seed	A fertilized ovule containing an embryo which forms a new plant upon germination.
SDL	Seedling	A plant grown from a seed.
SDM	Subdermis	area below the skin
SE	Sensory Organs	
SEM	Semen	a viscid whitish fluid of the male reproductive tract consisting of spermatozoa suspended in secretions of accessory glands
SG	Shell Gland	1) An organ that secretes the embryonic shell in many mollusks. 2) A specialized structure attached to the oviduct in certain animals that secretes the egg-shell material.

SH	Stomach	The tubular or saccular organ of the vertebrate digestive system located between the esophagus and the intestine and adapted for temporary food storage and for the preliminary stages of food breakdown.
SHF	Stomach or rumen fluid	Fluid found in the stomach or rumen
SI	Siphon	1) A tubular element in various algae. 2) A tubular structure for intake or output of water in bivalves and other mollusks. 3) The sucking-type of proboscis in many arthropods.
SIN	Small intestine	the part of the intestine that lies between the stomach and colon, consists of duodenum, jejunum, and ileum, secretes digestive enzymes, and is the chief site of the absorption of digested nutrients
SINM	Small intestine mucosa	A mucous membrane or tunica mucosa of the small intestine (Gray's)
SINS	Small intestine serosa	One of the delicate membranes of connective tissue which line the internal cavities of the small intestine. (Grays)
SK	Skin, Epidermis	The external covering of the vertebrate body, consisting of two layers, the outer epidermis and the inner dermis.
SKL	Skull	The bones and cartilages of the vertebrate head which forms the cranium and the face.
SKM	Skeletal Muscle	the striated muscle of vertebrates that is under voluntary control ( <a href="http://cancerweb.ncl.ac.uk/cgi-bin/omd?skeletal+muscle">http://cancerweb.ncl.ac.uk/cgi-bin/omd?skeletal+muscle</a> )

SL	Shell, Eggshell	The hard covering of an egg.
SLK	Silk	The silky styles on an ear of corn.
SLV	Stem to Leaves	
SM	Sperm	A mature male germ cell. (Spermatozoa)
SMT	Spermatheca	A sac in the female for receiving and storing sperm in fertilization; found in many invertebrates and certain vertebrates. (Seminal receptacle)
SCY	Spermatocyte	Cells of the male reproductive system that undergo two meiotic divisions to give haploid spermatids. (cancerweb.ncl.ac.uk)
SN	Skeleton	The hard framework of the animal body, especially the boney framework of the body of higher vertebrate animals.
SO	Shoot	The aerial portion of a plant, including stem, branches, and leaves. A new, immature growth on a plant.
SOT	Shoot tip	The tip of shoot
SP	Spleen	A blood-forming lymphoid organ of the circulatory system, present in most vertebrates. (McGraw-Hill)
SPB	Sphenoid bone	an irregularly shaped bone in front of the occipital in the base of the skull of the higher vertebrates. It is composed of several foetal bones which become united the adult. (Gray's)
SPI	Spine, Backbone	An articulated series of vertebrae forming the axial skeleton of the trunk and the tail. Spinal column, vertebral column
SPK	Spikelet	The compound inflorescence of a grass consisting of one or several bracteate spikes.
SPR	Sporophyte	An individual of the spore-bearing generation in plants exhibiting alternation of
SPT	Spermatid	The haploid product of the second meiotic division in spermatogenesis. Differentiate into mature spermatozoa. (Gray's)
SQ	Shell (Aquatic)	A hard calcareous, outer covering on an animal body, as of bivalves and turtles.

SR	Serum	The liquid portion that remains when blood clots spontaneously and the formed and clotting elements are removed by centrifugation; it differs from plasma by the absence of fibrinogen.
SRB	Strobilus (mega-, micro-, etc.)	1) Conelike structure made up of sporophyllus or spore-bearing leaves. 2) The cone membranes of the Pinophyta
SRC	Secretory Cell	A cell that secretes a fluid.
SS	Stem/Stalk	The organ of vascular plant that usually develops branches and bears leaves and flowers.
SSI	Serosa of the Small Intestines	Serous coat of the small intestine; the peritoneal covering of the external surface of the small intestine
SSC	Somatosensory center	Area of the brain that detects sensation relating to the body's superficial and deep parts
SSP	Stem plus Petioles	The stem and stock of the leaf that is attached to the stem.
ST	Soft Tissue	
STA	Setae	A slender, usually rigid bristle or hair. Also known as chaeta.
STB	Seminiferous tubules	Any of the tubercles of the testes which produce spermatozoa. (McGraw-Hill)
STE	Sternum or sternebrae	a compound ventral bone or cartilage of most vertebrates other than fishes that connects the ribs or the shoulder girdle or both and in humans consists of the manubrium, gladiolus, and xiphoid process -- called also breastbone (Webster's)

STG	Straw and grain	
STH	Straw and husk	
STL	Stolon	Horizontal branch from the base of a plant that produces new plants from buds at its tip or nodes.
STM	Striatum	The corpus striatum, a part of the brain (Webster's Dictionary)
STR	Straw	
STV	Stover mature cured stalks of grain with the ears removed that are used as feed for livestock (MW online)]	
SU	Stalk/Stem, Upper Half	
SV	Seminal Vesicle	A saclike, glandular diverticulum on each ductus deferens in male vertebrates; it is united with the excretory duct and serves for temporary storage of semen.
SVG	Salivary gland	Any of the saliva-secreting exocrine glands of the oral cavity. (Gray's)
SWB	Swim Bladder	A gas-filled cavity found in the body cavities of most bony fishes; has various functions in different fishes, acting as a float, a lung, a hearing aid, and a sound producing organ.
SX	Submaxillary Gland	(Submandibular gland) A large seromucous or mixed salivary gland located below the mandible on each side of the jaw.
<b>T</b>		



TA	Tail	1) The caudal fin of a fish or aquatic mammal. 2) The usually slender appendage that arises immediately above the anus in many vertebrates and contains the caudal vertebrae.
TAK	Thylakoid	Membranous cisternae of the chloroplast, found as part of the grana and also as single cisternae interconnecting the grana. Contain the photosynthetic pigments, reaction centres and electron transport chain. Each thylakoid consists of a flattened sac of membrane enclosing a narrow intra thylakoid space. (cancerweb.ncl.ac.uk)
TB	Tibia	The larger of the two leg bones, articulating with the femur, fibula, and talus
TBC	Tubercules	A small knoblike prominence.
TCH	Trachea	The windpipe. A fibrocartilaginous tube lined with mucous membrane passing from the larynx to the bronchi. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
TEL	Testicle, left	The testicle located on the left side of the body
TER	Testicle, right	The testicle located on the right side of the body
TCV	Thoracic vertebrae	The segments of the vertebral column, usually twelve, which articulate with ribs to form part of the thoracic cage. Synonym: vertebrae thoracicae. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
TD	Transudate	A fluid that passes through the pores or interstices of a membrane.
TE	Testes	The male reproductive glands in vertebrates; after sexual maturity, the source of sperm and hormones
TF	Tuber Flesh	Tuber = The enlarged end of a rhizome in which food accumulates, as is the potato.
TG	Thigh muscle	Thigh - The upper part of the leg, from the pelvis to the knee.
TH	Thorax	1) The chest; the cavity of the mammalian body between the neck and the diaphragm, containing the heart, lungs, and mediastinal structures. 2) The middle of three principal divisions of the body of certain classes of arthropods.
TI	Tissue	An aggregation of cells more or less similar morphologically and functionally.

TIL	Tillers	A shoot that develops from an axillary or adventitious bud at the base of a stem.
TK	Trunk	the main stem of a tree apart from limbs and roots or the human or animal body apart from the head and appendages Webster's
TLE	Trifoliolate Leaf/Leaves	A leaf consisting of three leaflets.
TLI	Thalli	Thallus = A plant body that is not differentiated into special tissue systems or organs and may vary from a single cell to a complex, branching multicellular structure.
TLM	Thalamus	Either of two large ovoid masses, consisting chiefly of gray substance, situated one on each side of and forming part of the lateral wall of the third ventricle. (Grey's on-line dictionary)
TLN	Telencephalon	the anterior subdivision of the embryonic forebrain or the corresponding part of the adult forebrain that includes the cerebral hemispheres and associated structures Webster's
TLS	Talus	the human tarsal bone that bears the weight of the body and that together with the tibia and fibula forms the ankle joint Webster's
TM	Tarsus-Metatarsus	
TMR	Tumor	An abnormal mass of tissue that results from excessive cell division that is uncontrolled and progressive, also called a neoplasm. Tumours perform no useful body function. They may be either benign (not cancerous) or malignant.

TN	Tentacles	Any of various elongate, flexible processes with tactile, prehensile, and sometimes other functions, and which are borne on the head or about the mouth of many animals.
TO	Tongue	A muscular organ located on the floor of the mouth of most vertebrates which may serve various functions, such as taking and swallowing food or tasting or as a tactile organ or sometimes as a prehensile organ.
TOP	Tops (Plant)	
TOR	Torso	Portion of the body excluding the head and limbs; trunk
TP	Tuber Peeling	
TR	Tarsus	The instep of the foot consisting of the calcaneus, talus, cuboid, navicular, medial, intermediate, and lateral cuneiform bones.
TRD	Tear duct	also known as harderian or lachrymal gland, a gland on the inner side of the orbit of many animals which have a third eyelid, or nictitating membrane. (cancerweb.ncl.ac.uk)
TS	Thymus	A lymphoid organ in the neck or upper thorax of all vertebrates; it is prominent in early life and is essential for normal development of the circulating pool of lymphocytes.
TSC	Thymus cortex	The outer layer of an organ or other body structure, as distinguished from the internal substance, in this case of the Thymus. (Grays)
TSL	Tassel	The terminal male inflorescence of some plants and especially corn.

TSM	Thymus medulla	The inner portion of an organ, in this case of the thymus. (Grays)
TT	Tibiotarsus	Pertaining to the tibia and the tarsus. Tibia - shin bone Tarsus - The seven bones constituting the articulation between the foot and the leg.
TTH	Tooth, teeth	One of the bony structures supported by the jaws in mammals and by other bones in the mouth and pharynx in lower vertebrates serving principally for prehension and mastication.
TU	Tuber	Tuber = The enlarged end of a rhizome in which food accumulates, as is the potato.
TY	Thyroid	An endocrine gland found in all vertebrates that produces, stores, and secretes the thyroid hormones.
<b>U</b>		
UB	Urinary Bladder	A hollow organ which serves as a reservoir for urine.
UBG	Ultimobranchial gland	in biology, any of the small bodies in the pharynx that develop behind the fifth pair of gill pouches in the vertebrate embryo. In mammals the ultimobranchial tissue has become incorporated into the parafollicular cells of the thyroid gland. Ultimobranchial glands produce the hormone calcitonin, which reduces the amount of calcium in the blood.( <a href="http://www.britannica.com/eb/article-9001367/ultimobranchial-gland">http://www.britannica.com/eb/article-9001367/ultimobranchial-gland</a> )
UG	Uropygial Gland	A relatively large, compact, bilobed, secretory organ located at the base of the tail of most birds having a keeled sternum. Also known as oil gland.
UL	Ulna	One of the bones that comprise the forearm. The largest aspect articulates with the humerus at the elbow joint and the smallest portion of the ulna articulates with the carpal bones in the wrist. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
ULE	Unifoliate (Primary) Leaf/Leaves	A single leaf.
UNT	Urinary tract	The organs of the body that produce and discharge urine. These include the kidneys, ureters, bladder, and urethra. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )

UP	Urogenital papillae	Urogenital = pertaining to the urinary and genital apparatus. Papillae = A small nipple-like projection, elevation, or structure.
UR	Urine	The fluid excreted by the kidneys
URT	Ureter	The tube passing from each kidney to the bladder for the conveyance of urine. Its average length is 25 to 30 centimeters. (Gray's)
UT	Uterus	The organ of gestation in mammals which receives and retains the fertilized ovum, holds the fetus during development, and becomes the principal agent of its expulsion at term.
<b>V</b>		
VA	Vagina	The canal from the vulvar opening to the cervix uteri. (McGraw-Hill)
VAS	Vasculature	
VC	Visual center	Area of the brain that detects visual stimulus
CL	Vacuole	a small cavity or space in the tissue of an organism containing air or fluid Webster's
VD	Vas Deferens	The portion of the excretory duct system of the testis which runs from the epididymal duct to the ejaculatory duct.
VE	Vertebra	One of the bones that make up the spine in vertebrates.
VG	Vegetative portion	WO - SD or FR
VGL	Visceral Ganglion	Any of the various ganglia that are part of the autonomic nervous system and are located along the sympathetic trunks, on the peripheral plexuses, and within the walls of organs. Also called visceral ganglion. (/medical-dictionary.thefreedictionary.com/)
VI	Viscera	The organs within the cavities of the body of an organism
VL	Villi	villus = A fingerlike projection from the surface of a membrane.
VN	Vines	A plant whose stem requires support and which climbs by tendrils or twining or creeps along the ground; also : the stem of such a plant

VNT	Ventricle	A chamber of the heart which receives blood from a corresponding atrium and from which blood is forced into the arteries Webster's
VSC	Vesicle	A closed membrane shell, derived from membranes by a physiological process.
<b>W</b>		
VV	Valve	One shell of a double shelled mollusc such as a clam or oyster. ( <a href="http://cancerweb.ncl.ac.uk">http://cancerweb.ncl.ac.uk</a> )
WI	Wings	Any of the paired appendages serving organs of flight on many animals
WL	Wall, Body	
WM	White matter	Brain tissue composed of myelin-coated nerve cell fibers.
WO	Whole Organism	
<b>Y</b>		
YO	Yolk	The yellow spherical mass of food material that makes up the central portion of the egg of a bird or reptile.
YS	Yolk sac	a membranous sac that is attached to an embryo and encloses food yolk, that is continuous in most forms through the yolk stalk with the intestinal cavity of the embryo, that being abundantly supplied with blood vessels is throughout embryonic life and in some forms later the chief organ of nutrition, and that in placental mammals is nearly vestigial and functions chiefly prior to the elaboration of the placenta Webster's
<b>Z</b>		
ZP	Zona pellucida	Pellucid zone: a thick, transparent, noncellular layer or envelope of uniform thickness surrounding an oocyte; also called oolemma. Under a microscope it appears radially striated and is therefore also called zona radiata, zona striata or striated membrane

## Appendix V. Common Keywords for Other Effects Text Field (AQUIRE only)

age efcts  
Alkalinity efcts  
Bacteria  
Conductivity efcts  
Critical Level  
Diet Study  
Depuration  
D.O. efcts  
Effluent  
Elimination  
fate  
Feeding efcts  
Field Study  
Food Chain Study  
Genotoxicity threshold  
Hardness efcts  
Humic Acid  
Hypoxia efcts  
Ind Taxon Result  
in vitro  
Kinetics  
Lethal Body Burden  
log LC50  
Metabolism  
metabolites  
Microtox  
Mixture  
nutrient study  
Oil  
Org\_C efcts  
pH efcts  
Pre-Exposure Study  
QSAR  
Radiolabel

Recovery  
Safe Conc (Safe Concentration)  
Salinity efcts  
Sediment  
Sex efcts  
Size efcts  
Temperature efcts  
Toxicity Symptoms  
Transport  
Uptake

## Appendix W. Water Chemistry Units (AQUIRE only)

<u>Code</u>	<u>Definition</u>
%	percent
% Sat	Percent saturation
C	Celsius
kDa	kilo Daltons
F	Fahrenheit
K	Kelvin
N	Normal
NR	Not reported
PSU	practical salinity units
cm	centimeters
dH	degrees German hardness
FS	French Hardness
ft	feet
g CaCO <sub>3</sub>	grams Calcium carbonate
g/kg	grams per kilograms
g/L	grams per liter
HCO <sub>3</sub>	Hydrogen carbonate
in	inches
m	meters
M NaCl	Molar Sodium Chloride
mho	mho A unit of conductance equal to the reciprocal of an ohm
mho/cm	mho per centimeter
mM	millimolar
mS	milli Siemens
mS/m	milli Siemens per meter
mg/dm <sup>3</sup>	milligram per cubic decimeter
meq	milli equivalents
meq/L	milli equivalents per liter
meq/100 g	milli equivalents per 100 grams
mg/L	milligrams per liter
mg/L C	milligrams per liter Carbon
mg/L CaCO <sub>3</sub>	milligrams / liter Calcium carbonate



<b><u>Code</u></b>	<b><u>Definition</u></b>
mg/L EDTA	milligrams per liter EDTA
mg/L FA	milligrams per liter fulvic acid
mg/L HA	milligrams per liter Humic acid
mg/L Mg	milligrams per liter Magnesium
mg/L MO	milligrams per liter Methyl Orange
ml/L	milliliter per liter
mg/ml	milligrams per milliliter
ml N/100 HCl	milliliter Nitrogen per 100 Hydrochloric acid
mm	millimeters
mm Hg	millimeters Mercury
mmhos *	milli ohms
mmhos/cm *	milliohms per centimeter
mmol/l	millimoles per liter
mmol/L CaCO <sub>3</sub>	millimoles per Liter Calcium Carbonate
mOsm	milliosmoles
mS/cm	milli Siemens per centimeter
mV	millivolts
ohms	ohms
ohm/cm	ohms per centimeter
ppm	parts per million
ppm CaCO <sub>3</sub>	parts per million CaCO <sub>3</sub>
ppm MO	parts per million Methyl Orange
ppt	parts per thousand
pptr	parts per trillion
S	Siemens
ug/L	micrograms per liter
uS	micro Siemens
uS/cm	microSiemens per centimeter
ueq/L	micro equivalents per liter
uM	micromolar
Umhos *	micro ohms
umhos/cm *	micro ohms per centimeter
umhos/cm <sup>2</sup> *	micro ohms per square centimeter
umhos/L	micromhos per liter
umhos/um *	micro ohms per micrometer
umol/L	micromoles per liter

**\* See ALP prior to assigning this code**

## Appendix X. Habitat Codes and Common Descriptors

Code	Habitat	Definition	Descriptors
E	Estuarine	"deepwater tidal habitats... with sporadic access to open ocean...ocean water... is diluted by freshwater..."; Salinity range between 0.5-30ppt	Bay Marsh, brackish, salt, tidal Estuary Swamp
L	Lacustrine	"permanently flooded lakes and reservoirs, intermittent lakes and tidal lakes with salinity $\leq 0.5$ ppt"; total area exceeds 8 ha (8 acres) and 2 m water depth.	Bay Cove Impoundment Lake
M	Marine	"open ocean overlying the continental shelf and it associated.... coastline; includes shallow coastal indentations or bays; salinity [typically] exceed 30 ppt"	Bay Gulf Open Ocean Reef Seaweed bed
P	Palustrine	"small, shallow, permanent or intermittent fresh water bodies"; total area $\leq 8$ ha (20 acres) and $\leq 2$ m water depth	Bog Fen Marsh Rice fields Swamp Wetland
R	Riverine	"a channel, an open conduit either naturally or artificially created which periodically or continuously contains moving water or which forms a connecting link between two bodies of standing water" salinity $\leq 0.5$ ppt	Creek River Stream Tidal River Tributary
D	Desert	Occur where rainfall is less than 50 cm/year.	Hot and Dry Semiarid Coastal Cold
F	Forest	Biological communities that are dominated by trees and other woody vegetation, Distinct forest types also occur within each of these broad groups.	Tropical (rainforest) Temperate Boreal forests (taiga)
G	Grasslands	Characterized as lands dominated by grasses rather than large shrubs or trees	Tropical (savannas) Temperate (prairie)

<b>Code</b>	<b>Habitat</b>	<b>Definition</b>	<b>Descriptors</b>
			Agriculture (monoculture)
T	Tundra	Extremely cold climate with low biotic diversity, simple vegetation structure, limitation of drainage (permafrost), short growing season.	Arctic (polar) Alpine (mountain)
NR	Not Reported		

**Appendix Y. Substrate Codes (AQUIRE only)**

<b>Code</b>	<b>Definition</b>
CL	Clay
GR	Gravel
M	Mineral
MX	Mixed substrate
MU	Mud
NR	Not Reported
O	Organic
SA	Sand
SI	Silt

## Appendix Z. Depth Units

Code	Definition
NR	Not reported
cm	Centimeters
ft	Feet
in	Inches
m	Meters
mm	Millimeters

**Appendix AA. Field Location Abbreviations (AQUIRE only)**

Aqu	Aquatic
Agric	Agricultural
Co	County
Cr	Creek
Dev	Development
Dis	District
E*	East
Env	Environmental
Exp	Experimental
Fish	Fisheries
Inst	Institute
Isl	Island
L	Lake
Lab	Laboratory
Natl	National
N*	North
NE*	Northeast
NW*	Northwest
MT	Mountain
R	River
Res	Research
Resvr	Reservoir
S*	South
SE*	Southeast
SW*	Southwest
St	Saint
Sta	Station
USFWS	United States Fish and Wildlife
Univ	University
W*	West

\*Do not abbreviate directional information that is part of the proper name of a location (e.g. South L or Northwest Territory)

## Appendix BB. Geographic Text (AQUIRE only)

AF	AFGHANISTAN	AL08	Kolonje	AG45	Ghardaia
AF01	Badakhshan	AL09	Korce	AG23	Guelma
AF02	Badghis	AL10	Kruje	AG46	Illizi
AF03	Baghlan	AL11	Kukes	AG24	Jijel
AF30	Balkh	AL12	Lezhe	AG47	Khenchela
AF05	Bamian	AL13	Librazhd	AG25	Laghouat
AF06	Farah	AL14	Lushnje	AG26	Mascara
AF07	Faryab	AL15	Mat	AG06	Medea
AF08	Ghazni	AL16	Mirdite	AG48	Mila
AF09	Ghowr	AL17	Permet	AG07	Mostaganem
AF10	Helmand	AL18	Pogradec	AG27	M'sila
AF11	Herat	AL19	Puke	AG49	Naama
AF31	Jowzjan	AL20	Sarande	AG09	Oran
AF13	Kabul	AL21	Shkoder	AG50	Ouargla
AF23	Kandahar	AL22	Skrapar	AG29	Oum el Bouaghi
AF13	Kapisa	AL23	Tepelene	AG51	Relizane
AF15	Konar	AL28	Tirane	AG10	Saida
AF24	Kondoz	AL26	Tropoje	AG12	Setif
AF16	Laghman	AL27	Vlore	AG30	Sidi Bel Abbes
AF17	Lowgar			AG31	Skikda
AF18	Nangarhar	AG	ALGERIA	AG52	Souk Ahras
AF19	Nimruz	AG34	Adrar	AG53	Tamanghasset
AF20	Oruzgan	AG35	Ain Defla	AG33	Tebessa
AF21	Paktia	AG36	Ain Temouchent	AG13	Tiaret
AF22	Paktika	AG01	Alger	AG54	Tindouf
AF22	Parvan	AG37	Annaba	AG55	Tipaza
AF32	Samangan	AG03	Batna	AG56	Tissemsilt
AF33	Sar-e Pol	AQ38	Bechar	AG14	Tizi Ouzou
AF26	Takhar	AG18	Bejaia	AG15	Tlemcen
AF27	Vardak	AG19	Biskra		
AF28	Zabol	AG20	Blida	AQ	AMERICAN SAMOA
		AG39	Bordj Bou Arreridj		
AL	ALBANIA	AG21	Bouira	AN	ANDORRA
AL01	Berat	AG40	Boumerdes	AN01	Andorra
AL02	Dibre	AG41	Chlef	AN02	Canillo
AL03	Durres	AG04	Constantine	AN03	Encamp
AL04	Elbasan	AG22	Djelfa	AN04	La Massana
AL05	Fier	AG42	El Bayadh	AN05	Ordino
AL06	Gjirokaster	AG43	El Oued	An06	Sant Julia de Loria
AL07	Gramsh	AG44	El Tarf		



AO ANGOLA	AR13 Mendoza	BF24 Acklins and Crooked Islands
AO19 Bengo	AR14 Misiones	BF05 Bimini
AO01 Benguela	AR15 Neuquen	BF06 Cat Island
AO02 Bie	AR16 Rio Negro	BF10 Exuma
AO03 Cabinda	AR17 Salta	BF25 Freeport
AO04 Cuando Cubango	AR18 San Juan	BF26 Fresh Creek
AO05 Cuanza Norte	AR19 San Luis	BF27 Governor's Harbour
AO06 Cuanza Sul	AR20 Santa Cruz	BF28 Green Turtle Cay
AO07 Cunene	AR21 Santa Fe	BF22 Harbour Island
AO08 Huambo	AR22 Santiago del Estero	BF29 High Rock
AO09 Huila	AR23 Tierra del Fuego, Antartidae Islas del Atlantico Sur	BG13 Inagua
AO20 Luanda	AR24 Tucuman	BF30 Kemps Bay
AO17 Lunda Norte		BF15 Long Island
AO18 Lunda Sul		BF31 Marsh Harbour
AO12 Malanje	AM ARMENIA	BF16 Mayaguana
AO14 Moxico	AA ARUBA	BF23 New Providence
AO15 Uige		BF32 Nichollstown and Berry Islands
AO16 Zaire	AT ASHMORE AND CARTIER ISLANDS	BF18 Ragged Island
AV ANGUILLA		BF33 Rock Sound
	* AS AUSTRALIA	BF34 Sandy Point
AY ANTARCTICA	AS01 Australian Capital Territory	BF35 San Salvador and Rum Cay
AC ANTIGUA AND BARBUDA	AS02 New South Wales	
AC01 Barbuda	AS03 Northern Territory	BA BAHRAIN
AC03 Saint George	AS04 Queensland	BA01 Al Hadd
AC04 Saint John	AS05 South Australia	BA02 Al Manamah
AC05 Saint Mary	AS06 Tasmania	BA08 Al Mintaqah al Gharbiyah
AC06 Saint Paul	AS07 Victoria	BA11 Al Mintaqah al Wusta
AC07 Saint Peter	AS08 Western Australia	BA10 Al Mintaqah ash Shamaliyah
AC08 Saint Philip		BA03 Al Muharraq
AR ARGENTINA	AU AUSTRIA	BA13 Ar Rifa` wa al Mintaqah al Janubiyah
AC01 Buenos Aires	AU01 Burgenland	BA05 Jidd Hafs
AC02 Catamarca	AU02 Karnten	BA14 Madinat Hamad
AR03 Chaco	AU03 Niederosterreich	BA12 Madinat `Isa
AR04 Chubut	AU04 Oberosterreich	BA09 Mintaqat Juzur Hawar
AR05 Cordoba	AU05 Salzburg	BA06 Sitrah
AR06 Corrientes	AU06 Steiermark	
AR07 Distrito Federal	AU07 Tirol	FQ BAKER ISLAND
AR08 Entre Rios	AU08 Vorarlberg	
AR09 Formosa	AU09 Wien	BG BANGLADESH
AR10 Jujuy	AJ AZERBAIJAN	BG22 Bagerhat
AR11 La Pampa		BG04 Bandarban
AR12 La Rioja	BF BAHAMAS, THE	

BG25	Barguna	BG64	Nilphamari	BE08	Oost-Vlaanderen
BG01	Barisal	BG13	Noakhali	BE09	West-Vlaanderen
BG23	Bhola	BG65	Pabna		
BG24	Bogra	BG66	Panchagar	BH	BELIZE
BG26	Brahmanbaria	BG67	Parbattya Chattagram	BH01	Belize
BG27	Chandpur	BG15	Patuakhali	BH02	Cayo
BG28	Chapai Nawabganj	BG68	Pirojpur	BH03	Corozal
BG29	Chattagram	BG69	Rajbari	BH04	Orange Walk
BG30	Chuadanga	BG70	Rajshahi	BH05	Stann Creek
BG05	Comilla	BG71	Rangpur	BH06	Toledo
BG31	Cox's Bazar	BG72	Satkhira		
BG32	Dhaka	BG73	Shariyatpur	BN	BENIN
BG33	Dinajpur	BG74	Sherpur	BN01	Atakora
BG34	Faridpur	BG75	Sirajganj	BN02	Atlantique
BG35	Feni	BG76	Sunamganj	BN03	Borgou
BG36	Gaibandha	BG77	Sylhet	BN04	Mono
BG37	Gazipur	BG78	Tangail	BN05	Oueme
BG38	Gopalganj	BG79	Thakurgaon	BN06	Zou
BG39	Habiganj				
BG40	Jaipurhat	BB	BARBADOS	BD	BERMUDA
BG41	Jamalpur	BB01	Christ Church	BD01	Devonshire
BG42	Jessore	BB02	Saint Andrew	BD03	Hamilton
BG43	Jhalakati	BB03	Saint George	BD03	Hamilton
BG44	Jhenaidah	BB04	Saint James	BD04	Paget
BG45	Khagrachari	BB05	Saint John	BD05	Pembroke
BG46	Khulna	BB06	Saint Joseph	BD06	Saint George
BG47	Kishorganj	BB07	Saint Lucy	BD07	Saint George's
BG48	Kurigram	BB08	Saint Michael	BD08	Sandys
BG49	Kushtia	BB09	Saint Peter	BD09	Smiths
BG50	Laksmipur	BB10	Saint Philip	BD10	Southampton
BG51	Lalmonirhat	BB11	Saint Thomas	BD11	Warwick
BG52	Madaripur				
BG53	Magura	BS	BASSAS DA INDIA	BT	BHUTAN
BG54	Manikganj			BT05	Bumthang
BG55	Meherpur	BO	BELARUS	BT06	Chhukha
BG56	Moulavibazar			BT07	Chirang
BG57	Munshiganj	BE	BELGIUM	BT08	Daga
BG12	Mymensingh	BE01	Antwerpen	BT09	Geylegphug
BG58	Naogaon	BE02	Brabant	BT10	Ha
BG59	Narail	BE03	Hainaut	BT11	Lhuntshi
BG60	Narayanganj	BE04	Liege	BT12	Mongar
BG61	Narsingdi	BE05	Limburg	BT13	Paro
BG62	Nator	BE06	Luxembourg	BT14	Pemagatsel
BG63	Netrakona	BE07	Namur	BT15	Punakha

BT16 Samchi	BR29 Goias	UV16 Bazega
BT17 Samdrup	BR13 Maranhao	UV17 Bougouriba
BT18 Shemgang	BR14 Mato Grosso	UV18 Boulgou
BT19 Tashigang	BR11 Mato Grosso do Sul	UV19 Boulkiemde
BT20 Thimphu	BR15 Minas Gerais	UV20 Ganzourgou
BT21 Tongsa	BR16 Para	UV21 Gnagna
BT22 Wangdi Phodrang	BR17 Paraiba	UV22 Gourma
	BR18 Parana	UV23 Houet
BL BOLIVIA	BR30 Pernambuco	UV24 Kadiogo
BL01 Chuquisaca	BR20 Piaui	UV25 Kenedougou
BL02 Cochabamba	BR21 Rio de Janeiro	UV26 Komoe
BL03 El Beni	BR22 Rio Grande do Norte	UV27 Kossi
BL04 La Paz	BR23 Rio Grande do Sul	UV28 Kouritenga
BL05 Oruro	BR24 Rondonia	UV29 Mouhoun
BL06 Pando	BR25 Roraima	UV30 Namentenga
BL07 Potosi	BR26 Santa Catarina	UV31 Naouri
BL08 Santa Cruz	BR27 Sao Paulo	UV32 Oubritenga
BL09 Tarija	BR28 Sergipe	UV33 Oudalan
	BR31 Tocantins	UV34 Passore
BK BOSNIA AND HERZEGOVINA		UV35 Poni
	IO BRITISH INDIAN OCEAN TERRITORY	UV36 Sanguie
* BC BOTSWANA		UV37 Sanmatenga
BC01 Central		UV38 Seno
BC02 Chobe	VI BRITISH VIRGIN ISLANDS	UV39 Sissili
BC03 Ghanzi		UV40 Soum
BC04 Kgalagadi	BX BRUNEI	UV41 Sourou
BC05 Kgatleng	BX01 Belait	UV42 Tapoa
BC06 Kweneng	BX02 Brunei and Muara	UV43 Yatenga
BC07 Ngamiland	BX03 Temburong	UV44 Zoundweogo
BC08 North-East	BX04 Tutong	
BC09 South-East		BM BURMA
BC10 Southern	BU BULGARIA	BM02 Chin State
	BU29 Burgas	BM03 Irrawaddy
BV BOUVET ISLAND	BU30 Grad Sofiya	BM04 Kachin State
	BU31 Khaskovo	BM05 Karan State
* BR BRAZIL	BU32 Lovech	BM06 Kayah State
BR01 Acre	BU33 Mikhaylovgrad	BM07 Magwe
BR02 Alagoas	BU34 Plovdiv	BM08 Mandalay
BR03 Amapa	BU35 Razgrad	BM13 Mon State
BR04 Amazonas	BU36 Sofiya	BM09 Pegu
BR05 Bahia	BU37 Varna	BM01 Rakhine State
BR06 Ceara		BM14 Rangoon
BR07 Distrito Federal	* UV BURKINA	BM10 Sagaing
BR08 Espirito Santo	UV15 Bam	BM11 Shan State

BM12 Tenasserim	CM12 Extreme-Nord	CJ08 Western
	CM05 Littoral	
BY BURUNDI	CM13 Nord	CT CENTRAL AFRICAN REPUBLIC
BY09 Bubanza	CM07 Nord-Ouest	CT01 Bamingui-Bangoran
BY02 Bujumbura	CM08 Ouest	CT18 Bangui
BY10 Bururi	CM14 Sud	CT02 Basse-Kotto
BY11 Cankuzo	CM09 Sud-Ouest	CT15 Gribingui
BY12 Cibitoke		CT03 Haute-Kotto
BY13 Gitega	* CA CANADA	CT04 Haute-Sangha
BY14 Karuzi	* CA01 Alberta	CT05 Haut-Mbomou
BY15 Kayanza	* CA02 British Columbia	CT06 Kemo-Gribingui
BY16 Kirundo	* CA03 Manitoba	CT07 Lobaye
BY17 Makamba	* CA04 New Brunswick	CT08 Mbomou
BY05 Muramvya	* CA05 Newfoundland	CT09 Nana-Mambere
BY18 Muyinga	* CA06 Northwest Territories	CT17 Ombella-Mpoko
BY19 Ngozi	* CA07 Nova Scotia	CT11 Ouaka
BY20 Rutana	* CA08 Ontario	CT12 Ouham
BY21 Ruyigi	* CA09 Prince Edward Island	CT13 Ouham-Pende
	* CA10 Quebec	CT16 Sangha
CB CAMBODIA	* CA11 Saskatchewan	CT14 Vakaga
CB01 Batdambang	* CA12 Yukon Territory	
CB02 Kampong Cham		CD CHAD
CB03 Kampong Chhnang	CV CAPE VERDE	CD01 Batha
CB04 Kampong Spoe	CV01 Boa Vista	CD02 Biltine
CB05 Kampong Thum	CV02 Brava	CD03Borkou-Ennedi-Tibesti
CB06 Kampot	CV03 Fogo	CD04 Chari-Baguirmi
CB07 Kandal	CV04 Maio	CD05 Guera
CB08 Kaoh Kong	CV05 Paul	CD06 Kanem
CB09 Kracheh	CV06 Praia	CD07 Lac
CB10 Mondol Kiri	CV07 Ribeira Grande	CD08 Logone Occidental
CB11 Phnum Penh	CV08 Sal	CD09 Logone Oriental
CB12 Pouthisat	CV09 Santa Catarina	CD10 Mayo-Kebbi
CB13 Preah Vihear	CV10 Sao Nicolau	CD11 Moyen-Chari
CB14 Prey Veng	CV11 Sao Vicente	CD12 Ouaddai
CB15 Rotanokiri	CV12 Tarrafal	CD13 Salamat
CB16 Siemreab-Otdar Meanchey		CD14 Tandjile
CB17 Stoeng Treng	CJ CAYMAN ISLANDS	
CB18 Svay Rieng	CJ01 Creek	CI CHILE
CB19 Takev	CJ02 Eastern	CI02 Aisen del General Carlos Ibanez del Campo
	CJ03 Midland	CI03 Antofagasta
* CM CAMEROON	CJ04 South Town	CI04 Araucania
CM10 Adamaoua	CJ05 Spot Bay	CI05 Atacama
CM11 Centre	CJ06 Stake Bay	CI06 Bio-Bio
CM04 Est	CJ07 West End	

CI07 Coquimbo		CF CONGO
CI08 Libertador General Bernardo O'Higgins	CK COCOS (KEELING) ISLANDS	CF01 Bouenza
CI09 Los Lagos		CF12 Brazzaville
CI10 Magallanes y de la Antartica Chilena	CO COLOMBIA	CF03 Cuvette
CI11 Maule	CO01 Amazonas	CF04 Kouilou
CI12 Region Metropolitana	CO02 Antioquia	CF05 Lekoumou
CI13 Tarapaca	CO03 Arauca	CF06 Likouala
Valparaiso	CO04 Atlantico	CF07 Niari
	CO35 Bolivar	CF08 Plateaux
	CO36 Boyaca	CF11 Pool
* CH CHINA	CO37 Caldas	CF10 Sangha
CH01 Anhui	CO08 Caqueta	
CH22 Beijing	CO32 Casanare	CW COOK ISLANDS
CH07 Fujian	CO09 Cauca	
CH15 Gansu	CO10 Cesar	CR CORAL SEA ISLANDS
CH30 Guangdong	CO11 Choco	
CH16 Guangxi	CO12 Cordoba	CS COSTA RICA
CH18 Guizhou	CO33 Cundinamarca	CS01 Alajuela
CH31 Hainan	CO34 Distrito Especial	CS02 Cartago
CH10 Hebei	CO15 Guainia	CS03 Guanacaste
CH08 Heilongjiang	CO14 Guaviare	CS04 Heredia
CH09 Henan	CO16 Huila	CS06 Limon
CH12 Hubei	CO17 La Guajira	CS07 Puntarenas
CH11 Hunan	CO38 Magdalena	CS08 San Jose
CH04 Jiangsu	CO19 Meta	
CH03 Jiangxi	CO20 Narino	IV COTE D'IVOIRE
CH05 Jilin	CO21 Norte de Santander	IV01 Abengourou
CH19 Liaoning	CO22 Putumayo	IV35 Abidjan
CH20 Nei Mongol	CO23 Quindio	IV04 Aboisso
CH21 Ningxia	CO24 Risaralda	IV05 Adzope
CH06 Qinghai	CO25 San Andres y Providencia	IV06 Agboville
CH26 Shaanxi	CO26 Santander	IV36 Bangolo
CH25 Shandong	CO27 Sucre	IV37 Beoumi
CH23 Shanghai	CO28 Tolima	IV07 Biankouma
CH24 Shanxi	CO29 Valle del Cauca	IV38 Bondoukou
CH27 Sichuan	CO30 Vaupes	IV27 Bongouanou
CH28 Tianjin	CO31 CVichada	IV39 Bouafle
CH13 Xinjiang		IV40 Bouake
CH14 Xizang	CN COMOROS	IV11 Bouna
CH29 Yunnan	CN01 Anjouan	IV12 Boundiali
CH02 Zhejiang	CN02 Grande Comore	IV03 Dabakala
KT CHRISTMAS ISLAND	CN03 Moheli	IV41 Daloa
		IV14 Danane
IP CLIPPERTON ISLAND		IV42 Daoukro

IV43	Dimbokro	CU13	Las Tunas	DO04	Saint George
IV16	Divo	CU03	Matanzas	DO05	Saint John
IV44	Duekoue	CU01	Pinar del Rio	DO06	Saint Joseph
IV17	Ferkessedougou	CU14	Sancti Spiritus	DO07	Saint Luke
IV18	Gagnoa	CU15	Santiago de Cuba	DO08	Saint Mark
IV45	Grand-Lahou	CU16	Villa Clara	DO09	Saint Patrick
IV46	Guiglo			DO10	Saint Paul
IV28	Issia	CY	CYPRUS	DO11	Saint Peter
IV20	Katiola	CY01	Famagusta		
IV21	Korhogo	CY02	Kyrenia	DR	DOMINICAN REPUBLIC
IV29	Lakota	CY03	Larnaca	DR01	Azua
IV47	Man	CY05	Limassol	DR02	Baoruco
IV30	Mankono	CY04	Nicosia	DR03	Barahona
IV48	Mbahiakro	CY06	Paphos	DR04	Dajabon
IV23	Odiene			DR05	Distrito Nacional
IV31	Oume	* EZ	CZECH REPUBLIC	DR06	Duarte
IV49	Sakassou			DR11	Elias Pina
IV50	San Pedro	* DA	DENMARK	DR28	El Seibo
IV51	Sassandra	DA01	Arhus	DR08	Espailat
IV25	Seguela	DA02	Bornholm	DR29	Hato Mayor
IV52	Sinfra	DA03	Frederiksborg	DR09	Independencia
IV32	Soubre	DA04	Fyn	DR10	La Altagracia
IV53	Tabou	DA05	Kobenhavn	DR12	La Romana
IV54	Tanda	DA07	Nordjylland	DR30	La Vega
IV55	Tiassale	DA08	Ribe	DR14	Maria Trinidad Sanchez
IV33	Tingrela	DA09	Ringkobing	DR31	Monsenor Nouel
IV26	Touba	DA10	Roskilde	DR15	Monte Cristi
IV56	Toumodi	DA11	Sonderjylland	DR32	Monte Plata
IV57	Vavoua	DA06	Staden Kobenhavn	DR16	Pedernales
IV58	Yamoussoukro	DA12	Storstrom	DR17	Peravia
IV34	Zuenoula	DA13	Vejle	DR18	Puerto Plata
		DA14	Vestsjalland	DR19	Salcedo
HR	CROATIA	DA15	Viborg	DR20	Samana
				DR21	Sanchez Ramirez
CU	CUBA	DJ	DJIBOUTI	DR33	San Cristobal
CU05	Camaguey	DJ01	`Ali Sabih	DR23	San Juan
CU07	Ciego de Avila	DJ02	Dikhil	DR24	San Pedro De Macoris
CU08	Cienfuegos	DJ03	Djibouti	DR25	Santiago
CU02	Ciudad de la Habana	DJ04	Obock	DR26	Santiago Rodriguez
CU09	Granma	DJ05	Tadjoura	DR27	Valverde
CU10	Guantanamo				
CU12	Holguin	DO	DOMINICA	EC	ECUADOR
CU04	Isla de la Juventud	DO02	Saint Andrew	EC02	Azuay
CU11	La Habana	DO03	Saint David	EC03	Bolivar

EC04	Canar	EG23	Qina	EN13	Raplamaa
EC05	Carchi	EG27	Shamal Sina'	EN14	Saaremaa
EC06	Chimborazo	EG24	Suhaj	EN15	Sillamae
EC07	Cotopaxi			EN16	Tallinn
EC08	El Oro	ES	EL SALVADOR	EN17	Tartu
EC09	Esmeraldas	ES01	Ahuachapan	EN18	Tartumaa
EC01	Galapagos	ES02	Cabanas	EN19	Valgamaa
EC10	Guayas	ES03	Chalatenango	EN20	Viljandimaa
EC11	Imbabura	ES04	Cuscatlan	EN21	Vorumaa
EC12	Loja	ES05	La Libertad		
EC13	Los Rios	ES06	La Paz	ET	ETHIOPIA
EC14	Manabi	ES07	La Union	ET15	Adis Abeba
EC15	Morona-Santiago	ES08	Morazan	ET01	Arsi
EC21	Napo	ES09	San Miguel	ET17	Asosa
EC17	Pastaza	ES10	San Salvador	ET38	Bale
EC18	Pichincha	ES11	Santa Ana	ET18	Borena
EC22	Sucumbios	ES12	San Vicente	ET19	Debub Gonder
EC19	Tungurahua	ES13	Sonsonate	ET20	Debub Shewa
EC20	Zamora-Chinchipe	ES14	Usulután	ET21	Debub Welo
				ET22	Dire Dawa
* EG	EGYPT	EK	EQUATORIAL GUINEA	ET23	Gambela
EG01	Ad Daqahliyah	EK03	Annobon	ET39	Gamo Gofa
EG02	Al Bahr al Ahmar	EK04	Bioko Norte	ET40	Ilubabor
EG03	Al Buhayrah	EK05	Bioko Sur	ET41	Kefa
EG04	Al Fayyum	EK06	Centro Sur	ET24	Metekel
EG05	Al Gharbiyah	EK07	Kie-Ntem	ET25	Mirab Gojam
EG06	Al Iskandariyah	EK08	Litoral	ET26	Mirab Harerge
EG07	Al Isma'iliyah	EK09	Wele-Nzas	ET27	Mirab Shewa
EG08	Al Jizah			ET28	Misrak Gojam
EG09	Al Minufiyah	ER	ERITREA	ET29	Misrak Harerge
EG10	Al Minya			ET30	Nazret
EG11	Al Qahirah	EN	ESTONIA	ET31	Ogaden
EG12	Al Qalyubiyah	EN01	Harjumaa	ET32	Omo
EG13	Al Wadi al Jadid	EN02	Hiiumaa	ET33	Semen Gonder
EG14	Ash Sharqiyah	EN03	Ida-Virumaa	ET34	Semen Shewa
EG15	As Suways	EN04	Jarvamaa	ET35	Semen Welo
EG16	Aswan	EN05	Jogevamaa	ET42	Sidamo
EG17	Asyut	EN06	Kohtla-Jarve	ET37	Tigray
EG18	Bani Suwayf	EN07	Laanemaa	ET43	Welega
EG19	Bur Sa'id	EN08	Laane-Virumaa		
EG20	Dumyat	EN09	Narva	EU	EUROPA ISLAND
EG26	Janub Sina'	EN10	Parnu		
EG21	Kafr ash Shaykh	EN11	Parnumaa	FK	FALKLAND ISLANDS (ISLAS MALVINAS)
EG22	Matruh	EN12	Polvamaa		

FO FAROE ISLANDS	FRA9 Languedoc-Roussillon	GM16 Berlin
	FRB1 Limousin	GM11 Brandenburg
	FRB2 Lorraine	GM03 Bremen
FM FEDERATED STATES OF MICRONESIA	FRB3 Midi-Pyrenees	GM04 Hamburg
FM03 Chuuk	FRB4 Nord-Pas-de-Calais	GM05 Hessen
FM01 Kosrae	FRB5 Pays de la Loire	GM12 Mecklenburg-Vorpommern
FM02 Pohnpei	FRB6 Picardie	GM06 Niedersachsen
FM04 Yap	FRB7 Poitou-Charentes	GM07 Nordrhein-Westfalen
	FRB8 Provence-Alpes-Cote d'Azur	GM08 Rheinland-Pfalz
FJ FIJI	FRB9 Rhone-Alpes	GM09 Saarland
FJ01 Central		GM13 Sachsen
FJ02 Eastern	FG FRENCH GUIANA	GM14 Sachsen-Anhalt
FJ03 Northern		GM10 Schleswig-Holstein
FJ04 Rotuma	FP FRENCH POLYNESIA	GM15 Thuringen
FJ05 Western		
* FI FINLAND	FS FRENCH SOUTHERN AND ANTARCTIC LANDS	* GH GHANA
FI01 Ahvenanmaa		GH02 Ashanti
FI02 Hame	GB GABON	GH03 Brong-Ahafo
FI03 Keski-Suomi	GB01 Estuaire	GH04 Central
FI04 Kuopio	GB02 Haut-Ogooue	GH05 Eastern
FI05 Kymi	GB03 Moyen-Ogooue	GH01 Greater Accra
FI06 Lappi	GB04 Ngounie	GH06 Northern
FI07 Mikkeli	GB05 Nyanga	GH10 Upper East
FI08 Oulu	GB06 Ogooue-Ivindo	GH11 Upper West
FI09 Pohjois-Karjala FI10 Turku ja Pori	GB07 Ogooue-Lolo	GH08 Volta
FI11 Uusimaa	GB08 Ogooue-Maritime	GH09 Western
FI12 Vaasa	GB09 Woleu-Ntem	
		GI GIBRALTAR
* FR FRANCE	GA GAMBIA, THE	GO GLORIOSO ISLANDS
FRC1 Alsace	GA01 Banjul	
FR97 Aquitaine	GA02 Lower River	GR GREECE
FR98 Auvergne	GA03 MacCarthy Island	GR31 Aitolia kai Akarnania
FR99 Basse-Normandie	GA07 North Bank	GR38 Akhaia
FRA1 Bourgogne	GA04 Upper River	GR36 Argolis
FRA2 Bretagne	GA05 Western	GR41 Arkadhia
FRA3 Centre		GR20 Arta
FRA4 Champagne-Ardenne	GZ GAZA STRIP	GR35 Attiki
FRA5 Corse		GR47 Dhodhekanisos
FRA6 Franche-Comte	GG GEORGIA	GR04 Drama
FRA7 Haute-Normandie		GR30 Evritania
FRA8 Ile-de-France	* GM GERMANY	GR01 Evros
	GM01 Baden-Wurtemberg	GR34 Evvoia
	GM02 Bayern	GR08 Florina



GR32 Fokis		GV05 Dabola
GR29 Fthiotis	GJ GRENADA	GV06 Dalaba
GR10 Grevena	GJ01 Saint Andrew	GV07 Dinguiraye
GR39 Ilia	GJ02 Saint David	GV08 Dubreka
GR12 Imathia	GJ03 Saint George	GV09 Faranah
GR17 Ioannina	GJ04 Saint John	GV10 Forecariah
GR45 Iraklion	GJ05 Saint Mark	GV11 Fria
GR23 Kardhitsa	GJ06 Saint Patrick	GV12 Gaoual
GR09 Kastoria		GV13 Gueckedou
GR14 Kavala	GP GUADELOUPE	GV14 Kankan
GR27 Kefallinia		GV15 Kerouane
GR25 Kerkira	GQ GUAM	GV16 Kindia
GR15 Khalkidhiki		GV17 Kissidougou
GR43 Khania	GT GUATEMALA	GV18 Koundara
GR50 Khios	GT01 Alta Verapaz	GV19 Kouroussa
GR49 Kikladhes	GT02 Baja Verapaz	GV20 Labe
GR06 Kilkis	GT03 Chimaltenango	GV21 Macenta
GR37 Korinthia	GT04 Chiquimula	GV22 Mali
GR11 Kozani	GT05 El Progreso	GV23 Mamou
GR42 Lakonia	GT06 Escuintla	GV24 Nzerekore
GR21 Larisa	GT07 Guatemala	GV25 Pita
GR46 Lasithi	GT08 Huehuetenango	GV26 Siguiriri
GR51 Lesvos	GT09 Izabal	GV27 Telimele
GR26 Levkas	GT10 Jalapa	GV28 Tougue
GR24 Magnisia	GT11 Jutiapa	GV29 Yomou
GR40 Messinia	GT12 Peten	
GR07 Pella	GT14 Quiche	PU GUINEA-BISSAU
GR16 Pieria	GT13 Quetzaltenango	PU01 Bafata
GR19 Preveza	GT15 Retalhuleu	PU12 Biombo
GR44 Rethimni	GT16 Sacatepequez	PU11 Bissau
GR02 Rodhopi	GT17 San Marcos	PU05 Bolama
GR48 Samos	GT18 Santa Rosa	PU06 Cacheu
GR05 Serrai	GT19 Solola	PU10 Gabu
GR18 Thesprotia	GT20 Suchitepequez	PU04 Oio
GR13 Thessaloniki	GT21 Totonicapan	PU02 Quinara
GR22 Trikala	GT22 Zacapa	PU07 Tombali
GR33 Voiotia		
GR03 Xanthi	GK GUERNSEY	GY GUYANA
GR28 Zakynthos		GY10 Barima-Waini
	GV GUINEA	GY11 Cuyuni-Mazaruni
GL GREENLAND	GV01 Beyla	GY12 Demerara-Mahaica
GL01 Nordgronland	GV02 Boffa	GY13 East Berbice-Corentyne
GL02 Ostgronland	GV03 Boke	GY14 Essequibo Islands-West Demerara
GL03 Vestgronland	GV04 Conakry	

GY15	Mahaica-Berbice	HU01	Bacs-Kiskun	IC03	Arnessysla
GY16	Pomeroon-Supenaam	HU02	Baranya	IC04	Austur-Bardastrandarsysla
GY17	Potaro-Siparuni	HU03	Bekes	IC05	Austur-Hunavatnssysla
GY18	Upper Demerara-Berbice	HU26	Bekescsaba	IC06	Austur-Skaftafellssysla
GY19	Upper Takutu-Upper Essequibo	HU04	Borsod-Abauj-Zemlen	IC07	Borgarfjardarsysla
		HU05	Budapest	IC08	Dalassysla
		HU06	Csongrad	IC09	Eyjafjardarsysla
HA	HAITI	HU07	Debrecen	IC10	Gullbringusysla
HA06	Artibonite	HU27	Dunaujvaros	IC11	Hafnarfjordur
HA07	Centre	HU28	Eger	IC12	Husavik
HA08	Grand' Anse	HU08	Fejer	IC13	Isafjordur
HA09	Nord	HU25	Gyor	IC14	Keflavik
HA10	Nord-Est	HU09	Gyor-Moson-Sopron	IC15	Kjosarsysla
HA03	Nord-Ouest	HU10	Hajdu-Bihar	IC16	Kopavogur
HA11	Ouest	HU11	Heves	IC17	Myrasysla
HA12	Sud	HU29	Hodmezovasarhely	IC18	Neskaupstadur
HA13	Sud-Est	HU20	Jasz-Nagykun-Szolnok	IC19	Nordur-Isafjardarsysla
		HU30	Kaposvar	IC20	Nordur-Mulasysla
HM	HEARD ISLAND AND MCDONALD ISLANDS	HU31	Kecskemet	IC21	Nordur-Tingeyjarsysla
		HU12	Komarom-Esztergom	IC22	Olafsfjordur
		HU13	Miskolc	IC23	Rangarvallasysla
HO	HONDURAS	HU32	Nagykanizsa	IC24	Reykjavik
HO01	Atlantida	HU14	Nograd	IC25	Saudarkrokur
HO02	Choluteca	HU33	Nyiregyhaza	IC26	Seydisfjordur
HO03	Colon	HU15	Pecs	IC27	Siglufjordur
HO04	Comayagua	HU16	Pest	IC28	Skagafjardarsysla
HO05	Copan	HU17	Somogy	IC29	Snafellsnes- og Hnappadalssysla
HO06	Cortes	HU34	Sopron	IC30	Strandasysla
HO07	El Paraiso	HU18	Szabolcs-Szatmar-Bereg	IC31	Sudur-Mulasysla
HO08	Francisco Morazan	HU19	Szeged	IC32	Sudur-Tingeyjarsysla
HO09	Gracias a Dios	HU35	Szekesfehervar	IC33	Vestmannaeyjar
HO10	Intibuca	HU36	Szolnok	IC34	Vestur-Bardastrandarsysla
HO11	Islas de la Bahia	HU37	Szombathely	IC35	Vestur-Hunavatnssysla
HO12	La Paz	HU38	Tatabanya	IC36	Vestur-Isafjardarsysla
HO13	Lempira	HU21	Tolna	IC37	Vestur-Skaftafellssysla
HO14	Ocotepeque	HU22	Vas		
HO15	Olancho	HU23	Veszprem		
HO16	Santa Barbara	HU39	Veszprem		
HO17	Valle	HU24	Zala		
HO18	Yoro	HU40	Zalaegerszeg		
HK	HONG KONG				
HQ	HOWLAND ISLAND	IC	ICELAND		
		IC01	Akranes		
* HU	HUNGARY	IC02	Akureyri		
				* IN	INDIA
				IN01	Andaman and Nicobar Islands
				IN02	Andhra Pradesh
				IN30	Arunachal Pradesh
				IN03	Assam
				IN04	Bihar
				IN05	Chandigarh

IN06 Dadra and Nagar Haveli	ID18 Nusa Tenggara Timur	IZ11 Arbil
IN32 Daman and Diu	ID19 Riau	IZ05 As Sulaymaniyah
IN07 Delhi	ID20 Sulawesi Selatan	IZ13 At Ta'mim
IN33 Goa	ID21 Sulawesi Tengah	IZ06 Babil
IN09 Gujarat	ID22 Sulawesi Tenggara	IZ07 Baghdad
IN10 Haryana	ID23 Sulawesi Utara	IZ08 Dahuk
IN11 Himachal Pradesh	ID24 Sumatera Barat	IZ09 Dhi Qar
IN12 Jammu and Kashmir	ID25 Sumatera Selatan	IZ10 Diyala
IN19 Karnataka	ID26 Sumatera Utara	IZ12 Karbala'
IN13 Kerala	ID27 Timor Timur	IZ14 Maysan
IN14 Lakshadweep	ID10 Yogyakarta	IZ15 Ninawa
IN15 Madhya Pradesh		IZ18 Salah ad Din
IN16 Maharashtra	* IR IRAN	IZ16 Wasit
IN17 Manipur	IR01 Azarbayjan-e Bakhtari	
IN18 Meghalaya	IR02 Azarbayjan-e Khavari	EI IRELAND
IN31 Mizoram	IR13 Bakhtaran	EI01 Carlow
IN20 Nagaland	IR22 Bushehr	EI02 Cavan
IN21 Orissa	IR03 Chahar Mahall va Bakhtiari	EI03 Clare
IN22 Pondicherry	IR28 Esfahan	EI04 Cork
IN23 Punjab	IR07 Fars	EI06 Donegal
IN24 Rajasthan	IR08 Gilan	EI07 Dublin
IN29 Sikkim	IR09 Hamadan	EI10 Galway
IN25 Tamil Nadu	IR11 Hormozgan	EI11 Kerry
IN26 Tripura	IR10 Ilam	EI12 Kildare
IN27 Uttar Pradesh	IR29 Kerman	EI13 Kilkenny
IN28 West Bengal	IR30 Khorasan	EI15 Laois
	IR15 Khuzestan	EI14 Leitrim
ID INDONESIA	IR05 Kohkiluyeh va Buyer Ahmadi	EI16 Limerick
ID01 Aceh	IR16 Kordestan	EI18 Longford
ID02 Bali	IR23 Lorestan	EI19 Louth
ID03 Bengkulu	IR24 Markazi	EI20 Mayo
ID09 Irian Jaya	IR17 Mazandaran	EI21 Meath
ID04 Jakarta Raya	IR25 Semnan	EI22 Monaghan
ID05 Jambi	IR04 Sistan va Baluchestan	EI23 Offaly
ID06 Jawa Barat	IR26 Tehran	EI24 Roscommon
ID07 Jawa Tengah	IR31 Yazd	EI25 Sligo
ID08 Jawa Timur	IR27 Zanjan	EI26 Tipperary
ID11 Kalimantan Barat		EI27 Waterford
ID12 Kalimantan Selatan	IZ IRAQ	EI29 Westmeath
ID13 Kalimantan Tengah	IZ01 Al Anbar	EI30 Wexford
ID14 Kalimantan Timur	IZ02 Al Basrah	EI31 Wicklow
ID15 Lampung	IZ03 Al Muthanna	
ID16 Maluku	IZ04 Al Qadisiyah	* IS ISRAEL
ID17 Nusa Tenggara Barat	IZ17 An Najaf	IS01 HaDarom

IS02	HaMerkaz		JA42	Toyama
IS03	HaZafon	* JA JAPAN	JA43	Wakayama
IS04	Hefa	JA01 Aichi	JA44	Yamagata
IS05	Tel Aviv	JA02 Akita	JA45	Yamaguchi
IS06	Yerushalayim	JA03 Aomori	JA46	Yamanashi
		JA04 Chiba		
* IT ITALY		JA05 Ehime	DQ	JARVIS ISLAND
IT01	Abruzzi	JA06 Fukui		
IT02	Basilicata	JA07 Fukuoka	JE	JERSEY
IT03	Calabria	JA08 Fukushima		
IT04	Campania	JA09 Gifu	JQ	JOHNSTON ATOLL
IT05	Emilia-Romagna	JA10 Gumma		
IT06	Friuli-Venezia Giulia	JA11 Hiroshima	JO	JORDAN
IT07	Lazio	JA12 Hokkaido	JO02	Al Balqa'
IT08	Liguria	JA13 Hyogo	JO09	Al Karak
IT09	Lombardia	JA14 Ibaraki	JO10	Al Mafrak
IT10	Marche	JA15 Ishikawa	JO11	`Amman
IT11	Molise	JA16 Iwate	JO12	At Tafilah
IT12	Piemonte	JA17 Kagawa	JO13	Az Zarqa
IT13	Puglia	JA18 Kagoshima	JO14	Irbid
IT14	Sardegna	JA19 Kanagawa	JO07	Ma`an
IT15	Sicilia	JA20 Kochi		
IT16	Toscana	JA21 Kumamoto	JU	JUAN DE NOVA ISLAND
IT17	Trentino-Alto Adige	JA22 Kyoto		
IT18	Umbria	JA23 Mie	KZ	KAZAKHSTAN
IT19	Valle d'Aosta	JA24 Miyagi		
IT20	Veneto	JA25 Miyazaki	*KE	KENYA
* JM JAMAICA		JA26 Nagano	KE01	Central
JM01	Clarendon	JA27 Nagasaki	KE02	Coast
JM02	Hanover	JA28 Nara	KE03	Eastern
JM17	Kingston	JA29 Niigata	KE05	Nairobi Area
JM04	Manchester	JA30 Oita	KE06	North-Eastern
JM07	Portland	JA31 Okayama	KE07	Nyanza
JM08	Saint Andrew	JA47 Okinawa	KE08	Rift Valley
JM09	Saint Ann	JA32 Osaka	KE09	Western
JM10	Saint Catherine	JA33 Saga		
JM11	Saint Elizabeth	JA34 Saitama	KQ	KINGMAN REEF
JM12	Saint James	JA35 Shiga		
JM13	Saint Mary	JA36 Shimane	KR	KIRIBATI
JM14	Saint Thomas	JA37 Shizuoka	KR01	Gilbert Islands
JM15	Trelawny	JA38 Tochigi	KR02	Line Islands
JM16	Westmoreland	JA39 Tokushima	KR03	Phoenix Islands
		JA40 Tokyo		
JN JAN MAYEN		JA41 Tottori	KN	KOREA, DEMOCRATIC

PEOPLE'S REPUBLIC OF	LA06 Louangphrabang	LY03 Al `Aziziyah
KN01 Chagang-do	LA07 Oudomxai	LY48 Al Fatih
KN16 Hamgyong-bukto	LA08 Phongsali	LY49 Al Jabal al Akhdar
KN03 Hamgyong-namdo	LA09 Saravan	LY05 Al Jufrah
KN07 Hwanghae-bukto	LA10 Savannakhet	LY50 Al Khums
KN06 Hwanghae-namdo	LA11 Vientiane	LY08 Al Kufrah
KN08 Kaesong-si	LA13 Xaignabouri	LY51 An Nuqat al Khams
KN09 Kangwon-do	LA14 Xiangkhoang	LY13 Ash Shati'
KN14 Namp'o-si		LY52 Awbari
KN11 P'yongan-bukto	LG LATVIA	LY53 Az Zawiyah
KN15 P'yongan-namdo		LY54 Banghazi
KN12 P'yongyang-si	LE LEBANON	LY55 Darnah
KN13 Yanggang-do	Al Biqa`	LY56 Ghadamis
	Al Janub	LY57 Gharyan
* KS KOREA, REPUBLIC OF	Ash Shamal	LY58 Misratah
KS01 Cheju-do	Bayrut	LY30 Murzuq
KS03 Cholla-bukto	Jabal Lubnan	LY34 Sabha
KS16 Cholla-namdo		LY59 Sawfajjin
KS05 Ch'ungch'ong-bukto	LT LESOTHO	LY60 Surt
KS17 Ch'ungch'ong-namdo	LT10 Berea	LY61 Tarabulus
KS12 Inch'on-jikhalsi	LT11 Butha-Buthe	LY41 Tarhunah
KS06 Kangwon-do	LT12 Leribe	LY42 Tubruq
KS18 Kwangju-jikhalsi	LT13 Mafeteng	LY62 Yafran
KS13 Kyonggi-do	LT14 Maseru	LY45 Zlitan
KS14 Kyongsang-bukto	LT15 Mohales Hoek	
KS08 Kyongsang-namdo	LT16 Mokhotlong	LS LIECHTENSTEIN
KS10 Pusan-jikhalsi	LT17 Qachas Nek	LS01 Balzers
KS11 Soul-t'ukpyolsi	LT18 Quthing	LS02 Eschen
KS15 Taegu-jikhalsi	LT19 Thaba-Tseka	LS03 Gamprin
KS19 Taejon-jikhalsi		LS04 Mauren
	LI LIBERIA	LS05 Planken
KU KUWAIT	LI01 Bong	LS06 Ruggell
KU01 Al Ahmadi	LI03 Grand Bassa	LS07 Schaan
KU02 Al Kuwayt	LI04 Grand Cape Mount	LS08 Schellenberg
KU03 Hawalli	LI02 Grand Jide	LS09 Triesen
	LI05 Lofa	LS10 Triesenberg
KG KYRGYZSTAN	LI06 Maryland	LS11 Vaduz
	LI07 Monrovia	
LA LAOS	LI08 Montserrado	LH LITHUANIA
LA01 Attapu	LI09 Nimba	
LA02 Champasak	LI10 Sino	LU LUXEMBOURG
LA03 Houaphan		LU01 Diekirch
LA04 Khammouan	LY LIBYA	LU02 Grevenmacher
LA05 Louang Namtha	LY47 Ajdabiya	LU03 Luxembourg

	MY03 Kelantan	ML08 Tombouctou
MC MACAU	MY15 Labuan	
MC01 Ilhas	MY04 Melaka	MT MALTA
MC02 Macau	MY05 Negeri Sembilan	
	MY06 Pahang	IM MAN, ISLE OF
MK MACEDONIA	MY07 Perak	
	MY08 Perlis	RM MARSHALL ISLANDS
MA MADAGASCAR	MY09 Pulau Pinang	
MA05 Antananarivo	MY16 Sabah	* MB MARTINIQUE
MA01 Antsiranana	MY11 Sarawak	
MA02 Fianarantsoa	MY12 Selangor	MR MAURITANIA
MA03 Mahajanga	MY13 Terengganu	MR07 Adrar
MA04 Toamasina	MY14 Wilayah Persekutuan	MR03 Assaba
MA06 Toliara		MR05 Brakna
		MR08 Dakhlet Nouadhibou
MI MALAWI	MV MALDIVES	MR04 Gorgol
MI24 Blantyre	MV02 Aliff	MR10 Guidimaka
MI02 Chikwawa	MV20 Baa	MR01 Hodh Ech Chargui
MI03 Chiradzulu	MV17 Daalu	MR02 Hodh El Gharbi
MI04 Chitipa	MV14 Faafu	MR12 Inchiri
MI06 Dedza	MV27 Gaafu Aliff	MR09 Tagant
MI07 Dowa	MV28 Gaafu Daalu	MR11 Tiris Zemmour
MI08 Karonga	MV07 Haa Aliff	MR06 Trarza
MI09 Kasungu	MV23 Haa Daalu	
MI11 Lilongwe	MV26 Kaafu	MP MAURITIUS
MI10 Machinga	MV05 Laamu	MP21 Agalega Islands
MI12 Mangochi	MV03 Laviyani	MP12 Black River
MI13 Mchinji	MV12 Meemu	MP22 Cargados Carajos
MI14 Mulanje	MV29 Naviyani	MP13 Flacq
MI25 Mwanza	MV25 Noonu	MP14 Grand Port
MI15 Mzimba	MV13 Raa	MP15 Moka
MI17 Nkhata Bay	MV01 Seenu	MP16 Pamplemousses
MI18 Nkhotakota	MV24 Shaviyani	MP17 Plaines Wilhems
MI19 Nsanje	MV08 Thaa	MP18 Port Louis
MI16 Ntcheu	MV04 Waavu	MP19 Riviere du Rempart
MI20 Ntchisi		MP23 Rodrigues
MI21 Rumphi	ML MALI	MP20 Savanne
MI22 Salima	ML01 Bamako	
MI05 Thyolo	ML02 Gao	MF MAYOTTE
MI23 Zomba	ML03 Kayes	
	ML07 Koulikoro	* MX MEXICO
* MY MALAYSIA	ML04 Mopti	MX01 Aguascalientes
MY01 Johor	ML05 Segou	MX02 Baja California
MY02 Kedah	ML06 Sikasso	MX03 Baja California Sur

MX04 Campeche	MG05 Darhan	MO17 Khenifra
MX05 Chiapas	MG06 Dornod	MO18 Khouribga
MX06 Chihuahua	MG07 Dornogovi	MO35 Laayoune
MX07 Coahuila de Zaragoza	MG08 Dundgovi	MO41 Larache
MX08 Colima	MG09 Dzavhan	MO19 Marrakech
MX09 Distrito Federal	MG22 Erdenet	MO20 Meknes
MX10 Durango	MG10 Govi-Altay	MO21 Nador
MX11 Guanajuato	MG11 Hentiy	MO22 Ouarzazate
MX12 Guerrero	MG12 Hovd	MO23 Oujda
MX13 Hidalgo	MG13 Hovsgol	MO24 Rabat-Sale
MX14 Jalisco	MG14 Omnogovi	MO25 Safi
MX15 Mexico	MG15 Ovorhangay	MO26 Settat
MX16 Michoacan de Ocampo	MG16 Selenge	MO38 Sidi Kacem
MX17 Morelos	MG17 Suhbaatar	MO27 Tanger
MX18 Nayarit	MG18 Tov	MO36 Tan-Tan
MX19 Nuevo Leon	MG20 Ulaanbaatar	MO37 Taounate
MX20 Oaxaca	MG19 Uvs	MO39 Taroudannt
MX21 Puebla		MO29 Tata
MX22 Queretaro de Arteaga	MW MONTENEGRO	MO30 Taza
MX23 Quintana Roo		MO40 Tetouan
MX24 San Luis Potosi	MH MONTSERRAT	MO32 Tiznit
MX25 Sinaloa	MH01 Saint Anthony	
MX26 Sonora	MH02 Saint Georges	MZ MOZAMBIQUE
MX27 Tabasco	MH03 Saint Peter	MZ01 Cabo Delgado
MX28 Tamaulipas		MZ02 Gaza
MX29 Tlaxcala	MO MOROCCO	MZ03 Inhambane
MX30 Veracruz-Llave	MO01 Agadir	MZ10 Manica
MX31 Yucatan	MO02 Al Hoceima	MZ04 Maputo
MX32 Zacatecas	MO03 Azilal	MZ06 Nampula
	MO05 Beni Mellal	MZ07 Niassa
MQ MIDWAY ISLANDS	MO04 Ben Slimane	MZ05 Sofala
	MO06 Boulemane	MZ08 Tete
MD MOLDOVA	MO07 Casablanca	MZ09 Zambezia
	MO08 Chaouen	
MN MONACO	MO09 El Jadida	WA NAMIBIA
MN01 La Condamine	MO10 El Kelaa des Srarhna	WA01 Bethanien
MN02 Monaco	MO11 Er Rachidia	WA03 Boesmanland
MN03 Monte-Carlo	MO12 Essaouira	WA02 Caprivi Oos
	MO13 Fes	WA22 Damaraland
MG MONGOLIA	MO14 Figuig	WA04 Gobabis
MG01 Arhangay	MO33 Guelmim	WA05 Grootfontein
MG02 Bayanhongor	MO34 Ifrane	WA23 Hereroland Oos
MG03 Bayan-Olgii	MO15 Kenitra	WA24 Hereroland Wes
MG21 Bulgan	MO16 Khemisset	WA06 Kaokoland

WA20 Karasburg	NP08 Lumbini	NZ20 Eltham
WA07 Karibib	NP09 Mahakali	NZ21 Eyre
WA25 Kavango	NP10 Mechi	NZ22 Featherston
WA08 Keetmanshoop	NP11 Narayani	NZ24 Franklin
WA09 Luderitz	NP12 Rapti	NZ26 Golden Bay
WA10 Maltahohe	NP13 Sagarmatha	NZ27 Great Barrier Island
WA26 Mariental	NP14 Seti	NZ28 Grey
WA27 Namaland		NZ29 Hauraki Plains
WA11 Okahandja	* NL NETHERLANDS	NZ30 Hawera
WA12 Omaruru	NL01 Drenthe	NZ31 Hawke's Bay
WA13 Otjiwarongo	NL12 Dronten	NZ32 Heathcote
WA14 Outjo	NL02 Friesland	NZD9 Hikurangi
WA15 Owambo	NL03 Gelderland	NZ33 Hobson
WA16 Rehoboth	NL04 Groningen	NZ34 Hokianga
WA17 Swakopmund	NL14 Lelystad	NZ35 Horowhenua
WA18 Tsumeb	NL05 Limburg	NZD4 Hurunui
WA21 Windhoek	NL06 Noord-Brabant	NZ36 Hutt
	NL07 Noord-Holland	NZ37 Inangahua
NR00 NAURU	NL08 Overijssel	NZ38 Inglewood
NR01 Aiwo	NL09 Utrecht	NZ39 Kaikoura
NR02 Anabar	NL10 Zeeland	NZ40 Kairanga
NR03 Anetan	NL13 Zuidelijke IJsselmeerpolders	NZ41 Kiwitea
NR04 Anibare	NL11 Zuid-Holland	NZ43 Lake
NR05 Baiti		NZ45 Mackenzie
NR06 Boe	NT NETHERLANDS ANTILLES	NZ46 Malvern
NR07 Buada		NZE1 Manaia
NR08 Denigomodu	NC NEW CALEDONIA	NZ47 Manawatu
NR09 Ewa		NZ48 Mangonui
NR10 Ijuw	* NZ NEW ZEALAND	NZ49 Maniototo
NR11 Meneng	NZ01 Akaroa	NZ50 Marlborough
NR12 Nibok	NZ03 Amuri	NZ51 Masterton
NR13 Uaboe	NZ04 Ashburton	NZ52 Matamata
NR14 Yaren	NZ07 Bay of Islands	NZ53 Mount Herbert
	NZ08 Bruce	NZ54 Ohinemuri
BQ NAVASSA ISLAND	NZ09 Buller	NZ55 Opotiki
	NZ10 Chatham Islands	NZ56 Oroua
NP NEPAL	NZ11 Cheviot	NZ57 Otamatea
NP01 Bagmati	NZ12 Clifton	NZ58 Otorohanga
NP02 Bheri	NZ13 Clutha	NZ59 Oxford
NP03 Dhawalagiri	NZ14 Cook	NZ60 Pahiatua
NP04 Gandaki	NZ16 Dannevirke	NZ61 Paparua
NP05 Janakpur	NZ17 Egmont	NZ63 Patea
NP06 Karnali	NZ18 Eketahuna	NZ65 Piako
NP07 Kosi	NZ19 Ellesmere	NZ66 Pohangina



NZ67 Raglan	NZA2 Whangaroa	NI39 Jigawa
NZ68 Rangiora	NZA3 Woodville	NI23 Kaduna
NZ69 Rangitikei		NI29 Kano
NZ70 Rodney	NU NICARAGUA	NI24 Katsina
NZ71 Rotorua	NU01 Boaco	NI40 Kebbi
NZE2 Runanga	NU02 Carazo	NI41 Kogi
NZE3 Saint Kilda	NU03 Chinandega	NI30 Kwara
NZD5 Silverpeaks	NU04 Chontales	NI05 Lagos
NZ72 Southland	NU05 Esteli	NI31 Niger
NZ73 Stewart Island	NU06 Granada	NI16 Ogun
NZ74 Stratford	NU07 Jinotega	NI17 Ondo
NZD6 Strathallan	NU08 Leon	NI42 Osun
NZ76 Taranaki	NU09 Madriz	NI32 Oyo
NZ77 Taumarunui	NU10 Managua	NI19 Plateau
NZ78 Taupo	NU11 Masaya	NI10 Rivers
NZ79 Tauranga	NU12 Matagalpa	NI33 Sokoto
NZE4 Thames-Coromandel	NU13 Nueva Segovia	NI43 Taraba
NZ81 Tuapeka	NU14 Rio San Juan	NI44 Yobe
NZ82 Vincent	NU15 Rivas	
NZ83 Waiapu	NU16 Zelaya	NE NIUE
NZD8 Waiheke		
NZ84 Waihemo	NG NIGER	NF NORFOLK ISLAND
NZ85 Waikato	NG01 Agadez	
NZ86 Waikohu	NG02 Diffa	CQ NORTHERN MARIANA ISLANDS
NZ88 Waimairi	NG03 Dosso	
NZ89 Waimarino	NG04 Maradi	
NZ90 Waimate	NG05 Niamey	* NO NORWAY
NZ91 Waimate West	NG06 Tahoua	NO01 Akershus
NZ92 Waimea	NG07 Zinder	NO02 Aust-Agder
NZ93 Waipa		NO04 Buskerud
NZ95 Waipawa	NI NIGERIA	NO05 Finnmark
NZ96 Waipukurau	NI34 Abia	NO06 Hedmark
NZ97 Wairarapa South	NI11 Abuja Capital Territory	NO07 Hordaland
NZ98 Wairewa	NI35 Adamawa	NO08 More og Romsdal
NZ99 Wairoa	NI21 Akwa Ibom	NO09 Nordland
NZA4 Waitaki	NI25 Anambra	NO10 Nord-Trondelag
NZA6 Waitomo	NI06 Bauchi	NO11 Oppland
NZA8 Waitotara	NI26 Benue	NO12 Oslo
NZE6 Wallace	NI27 Borno	NO13 Ostfold
NZB2 Wanganui	NI22 Cross River	NO14 Rogaland
NZE5 Waverley	NI36 Delta	NO15 Sogn og Fjordane
NZB3 Westland	NI37 Edo	NO16 Sor-Trondelag
NZB4 Whakatane	NI38 Enugu	NO17 Telemark
NZA1 Whangarei	NI28 Imo	NO18 Troms

NO19 Vest-Agder	PP04 Northern	PE13 La Libertad
NO20 Vestfold	PP07 North Solomons	PE14 Lambayeque
	PP18 Sandaun	PE15 Lima
MU OMAN	PP05 Southern Highlands	PE16 Loreto
	PP06 Western	PE17 Madre de Dios
PK PAKISTAN	PP16 Western Highlands	PE18 Moquegua
PK06 Azad Kashmir	PP17 West New Britain	PE19 Pasco
PK02 Balochistan		PE20 Piura
PK01 Federally Administered Tribal Areas	PF PARACEL ISLANDS	PE21 Puno
PK08 Islamabad		PE22 San Martin
PK07 Northern Areas	PA PARAGUAY	PE23 Tacna
PK03 North-West Frontier	PA18 Alto Paraguay	PE24 Tumbes
PK04 Punjab	PA01 Alto Parana	PE25 Ucayali
PK05 Sindh	PA02 Amambay	
	PA03 Boqueron	RP PHILIPPINES
LQ PALMYRA ATOLL	PA04 Caaguazu	RP01 Abra
	PA05 Caazapa	RP02 Agusan del Norte
	PA19 Canindeyu	RP03 Agusan del Sur
* PM PANAMA	PA06 Central	RP04 Aklan
PM01 Bocas del Toro	PA20 Chaco	RP05 Albay
PM02 Chiriqui	PA07 Concepcion	RPA1 Angeles
PM03 Cocle	PA08 Cordillera	RP06 Antique
PM04 Colon	PA10 Guaira	RPG8 Aurora
PM05 Darien	PA11 Itapua	RPA2 Bacolod
PM06 Herrera	PA12 Misiones	RPA3 Bago
PM07 Los Santos	PA13 Neembucu	RPA4 Baguio
PM08 Panama	PA21 Nueva Asuncion	RPA5 Bais
PM09 San Blas	PA15 Paraguari	RP22 Basilan
PM10 Veraguas	PA16 Presidente Hayes	RPA6 Basilan City
	PA17 San Pedro	RP07 Bataan
PP PAPUA NEW GUINEA		RP08 Batanes
PP01 Central	PE PERU	RP09 Batangas
PP08 Chimbu	PE01 Amazonas	RPA7 Batangas City
PP09 Eastern Highlands	PE02 Ancash	RP10 Benguet
PP10 East New Britain	PE03 Apurimac	RP11 Bohol
PP11 East Sepik	PE04 Arequipa	RP12 Bukidnon
PP19 Enga	PE05 Ayacucho	RP13 Bulacan
PP02 Gulf	PE06 Cajamarca	RPA8 Butuan
PP12 Madang	PE07 Callao	RPA9 Cabanatuan
PP13 Manus	PE08 Cusco	RPB1 Cadiz
PP03 Milne Bay	PE09 Huancavelica	RP14 Cagayan
PP14 Morobe	PE10 Huanuco	RPB2 Cagayan de Oro
PP20 National Capital	PE11 Ica	RPB3 Calbayog
PP15 New Ireland	PE12 Junin	RPB4 Caloocan

RP15	Camarines Norte	RPD8	Mandaue	RP59	Southern Leyte
RP16	Camarines Sur	RPD9	Manila	RP71	Sultan Kudarat
RP17	Camiguin	RPE1	Marawi	RP60	Sulu
RPB5	Canlaon	RP38	Marinduque	RPF9	Surigao
RP18	Capiz	RP39	Masbate	RP61	Surigao del Norte
RP19	Catanduanes	RP40	Mindoro Occidental	RP62	Surigao del Sur
RP20	Cavite	RP41	Mindoro Oriental	RPG1	Tacloban
RPB6	Cavite City	RP42	Misamis Occidental	RPG2	Tagaytay
RP21	Cebu	RP43	Misamis Oriental	RPG3	Tagbilaran
RPB7	Cebu City	RP44	Mountain	RPG4	Tangub
RPB8	Cotabato	RPE2	Naga	RP63	Tarlac
RPB9	Dagupan	RPH3	Negros Occidental	RP72	Tawitawi
RPC1	Davao	RP46	Negros Oriental	RPG5	Toledo
RPC2	Dapitan	RP57	North Cotabato	RPG6	Trece Martires
RP24	Davao	RP67	Northern Samar	RP64	Zambales
RPC3	Davao City	RP47	Nueva Ecija	RPG7	Zamboanga
RP25	Davao del Sur	RP48	Nueva Vizcaya	RP65	Zamboanga del Norte
RP26	Davao Oriental	RPE3	Olongapo	RP66	Zamboanga del Su
RPC4	Dipolog	RPE4	Ormoc	r	
RPC5	Dumaguete	RPE5	Oroquieta	PC	PITCAIRN ISLANDS
RP23	Eastern Samar	RPE6	Ozamis		
RPC6	General Santos	RPE7	Pagadian	* PL	POLAND
RPC7	Gingoog	RP49	Palawan	PL23	Biala Podlaska
RP27	Ifugao	RPE8	Palayan	PL24	Bialystok
RPC8	Iligan	RP50	Pampanga	PL25	Bielsko
RP28	Ilocos Norte	RP51	Pangasinan	PL26	Bydgoszcz
RP29	Ilocos Sur	RPE9	Pasay	PL27	Chelm
RP30	Iloilo	RPF1	Puerto Princesa	PL28	Ciechanow
RPC9	Iloilo City	RPH2	Quezon	PL29	Czestochowa
RPD1	Iriga	RPF2	Quezon City	PL30	Elblag
RP31	Isabela	RP68	Quirino	PL31	Gdansk
RP32	Kalinga-Apayao	RP53	Rizal	PL32	Gorzow
RPD2	La Carlota	RP54	Romblon	PL33	Jelenia Gora
RP33	Laguna	RPF3	Roxas	PL34	Kalisz
RP34	Lanao del Norte	RP55	Samar	PL35	Katowice
RP35	Lanao del Sur	RPF4	San Carlos, Negros Occidental	PL36	Kielce
RPD3	Laoag	RPF5	San Carlos, Pangasinan	PL37	Konin
RPD4	Lapu-Lapu	RPF6	San Jose	PL38	Koszalin
RP36	La Union	RPF7	San Pablo	PL39	Krakow
RPD5	Legaspi	RPF8	Silay	PL40	Krosno
RP37	Leyte	RP69	Siquijor	PL41	Legnica
RPD6	Lipa	RP58	Sorsogon	PL42	Leszno
RPD7	Lucena	RP70	South Cotabato	PL43	Lodz
RP56	Maguindanao			PL44	Lomza

PL45 Lublin	PO18 Santarem	RO31 Salaj
PL46 Nowy Sacz	PO19 Setubal	RO32 Satu Mare
PL47 Olsztyn	PO20 Viana do Castelo	RO33 Sibiu
PL48 Opole	PO21 Vila Real	RO34 Suceava
PL49 Ostroleka	PO22 Viseu	RO35 Teleorman
PL50 Pila		RO36 Timis
PL51 Piotrkow	RQ PUERTO RICO	RO37 Tulcea
PL52 Plock		RO38 Vaslui
PL53 Poznan	QA QATAR	RO39 Vilcea
PL54 Przemysl		RO40 Vrancea
PL55 Radom	RE REUNION	
PL56 Rzeszow		* RS RUSSIA
PL57 Siedlce	RO ROMANIA	
PL58 Sieradz	RO01 Alba	RW RWANDA
PL59 Skierniewice	RO02 Arad	RW01 Butare
PL60 Slupsk	RO03 Arges	RW02 Byumba
PL61 Suwalki	RO04 Bacau	RW03 Cyangugu
PL62 Szczecin	RO05 Bihor	RW04 Gikongoro
PL63 Tarnobrzeg	RO06 Bistrita-Nasaud	RW05 Gisenyi
PL64 Tarnow	RO07 Botosani	RW06 Gitarama
PL65 Torun	RO08 Braila	RW07 Kibungo
PL66 Walbrzych	RO09 Brasov	RW08 Kibuye
PL67 Warszawa	RO10 Bucuresti	RW09 Kigali
PL68 Wloclawek	RO11 Buzau	RW10 Ruhengeri
PL69 Wroclaw	RO41 Calarasi	
PL70 Zamosc	RO12 Caras-Severin	SC ST. KITTS AND NEVIS
PL71 Zielona Gora	RO13 Cluj	SC01 Christ Church Nichola Town
	RO14 Constanta	SC02 Saint Anne Sandy Point
PO PORTUGAL	RO15 Covasna	SC03 Saint George Basseterre
PO02 Aveiro	RO16 Dimbovita	SC04 Saint George Gingerland
PO23 Azores	RO17 Dolj	SC05 Saint James Windward
PO03 Beja	RO18 Galati	SC06 Saint John Capisterre
PO04 Braga	RO19 Gorj	SC07 Saint John Figtree
PO05 Braganca	RO42 Giurgiu	SC08 Saint Mary Cayon
PO06 Castelo Branco	RO20 Harghita	SC09 Saint Paul Capisterre
PO07 Coimbra	RO21 Hunedoara	SC10 Saint Paul Charlestown
PO08 Evora	RO22 Ialomita	SC11 Saint Peter Basseterre
PO09 Faro	RO23 Iasi	SC12 Saint Thomas Lowland
PO11 Guarda	RO25 Maramures	SC13 Saint Thomas Middle Island
PO13 Leiria	RO26 Mehedinti	SC15 Trinity Palmetto Point
PO14 Lisboa	RO27 Mures	
PO10 Madeira	RO28 Neamt	SH ST. HELENA
PO16 Portalegre	RO29 Olt	SH01 Ascension
PO17 Porto	RO30 Prahova	SH02 Saint Helena

SH03	Tristan da Cunha	SA03	Al Jawf	SE17	Mont Buxton
		SA05	Al Madinah	SE18	Mont Fleuri
ST	ST. LUCIA	SA08	Al Qasim	SE19	Plaisance
ST01	Anse-la-Rayé	SA09	Al Qurayyat	SE20	Pointe La Rue
ST03	Castries	SA10	Ar Riyad	SE21	Port Gland
ST04	Choiseul	SA06	Ash Sharqiyah	SE22	Saint Louis
ST02	Dauphin	SA11	`Asir	SE23	Takamaka
ST05	Dennery	SA13	Ha'il		
ST06	Gros-Islet	SA17	Jizan	SL	SIERRA LEONE
ST07	Laborie	SA14	Makkah	SL01	Eastern
ST08	Micoud	SA16	Najran	SL02	Northern
ST11	Praslin	SA19	Tabuk	SL03	Southern
ST09	Soufriere			SL04	Western Area
ST10	Vieux-Fort	SG	SENEGAL		
		SG01	Dakar	SN	SINGAPORE
SB	ST. PIERRE AND MIQUELON	SG03	Diourbel		
		SG09	Fatick	* LO	SLOVAKIA
VC	ST. VINCENT AND THE GRENADINES	SG10	Kaolack		
		SG11	Kolda	* SI	SLOVENIA
VC01	Charlotte	SG08	Louga		
VC06	Grenadines	SG04	Saint-Louis	BP	SOLOMON ISLANDS
VC02	Saint Andrew	SG05	Tambacounda	BP05	Central
VC03	Saint David	SG07	Thies	BP06	Guadalcanal
VC04	Saint George	SG12	Ziguinchor	BP07	Isabel
VC05	Saint Patrick			BP08	Makira
		SR	SERBIA	BP03	Malaita
SM	SAN MARINO			BP09	Temotu
SM01	Acquaviva	SE	SEYCHELLES	BP04	Western
SM06	Borgo Maggiore	SE01	Anse aux Pins		
SM02	Chiesanuova	SE02	Anse Boileau	SO	SOMALIA
SM03	Domagnano	SE03	Anse Etoile	SO01	Bakool
SM04	Faetano	SE04	Anse Louis	SO02	Banaadir
SM05	Fiorentino	SE05	Anse Royale	SO03	Bari
SM08	Monte Giardino	SE06	Baie Lazare	SO04	Bay
SM07	San Marino	SE07	Baie Sainte Anne	SO05	Galguduud
SM09	Serravalle	SE08	Beau Vallon	SO06	Gedo
		SE09	Bel Air	SO07	Hiiraan
TP	SAO TOME AND PRINCIPE	SE10	Bel Ombre	SO08	Jubbada Dhexe
TP01	Principe	SE11	Cascade	SO09	Jubbada Hoose
TP02	Sao Tome	SE12	Glacis	SO10	Mudug
		SE13	Grand' Anse (Mahe)	SO11	Nugaal
SA	SAUDI ARABIA	SE14	Grand' Anse (Praslin)	SO12	Sanaag
SA02	Al Bahah	SE15	La Digue	SO13	Shabeellaha Dhexe
SA15	Al Hudud ash Shamaliyah	SE16	La Riviere Anglaise	SO14	Shabeellaha Hoose

SO15 Togdheer	CE10 Kandy	WZ05 Praslin
SO16 Woqooyi Galbeed	CE11 Kegalla	WZ04 Shiselweni
	CE12 Kurunegala	
SF SOUTH AFRICA	CE26 Mannar	* SW SWEDEN
SF01 Cape Province	CE14 Matale	SW01 Alvsborgs Lan
SF02 Natal	CE15 Matara	SW02 Blekinge Lan
SF03 Orange Free State	CE16 Moneragala	SW03 Gavleborgs Lan
SF04 Transvaal	CE27 Mullaittivu	SW04 Goteborgs och Bohus Lan
	CE17 Nuwara Eliya	SW05 Gotlands Lan
SX SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS	CE18 Polonnaruwa	SW06 Hallands Lan
	CE19 Puttalam	SW07 Jamtlands Lan
	CE20 Ratnapura	SW08 Jonkopings Lan
* SP SPAIN	CE21 Trincomalee	SW09 Kalmar Lan
SP51 Andalucia	CE28 Vavuniya	SW10 Kopparbergs Lan
SP52 Aragon		SW11 Kristianstads Lan
SP34 Asturias	SU SUDAN	SW12 Kronobergs Lan
SP53 Canarias	SU26 A`ali an Nil	SW13 Malmohus Lan
SP39 Cantabria	SU28 Al Istiwa'iyah	SW14 Norrbottens Lan
SP54 Castilla-La Mancha	SU29 Al Khartum	SW15 Orebro Lan
SP55 Castilla y Leon	SU27 Al Wusta	SW16 Ostergotlands Lan
SP56 Cataluna	SU30 Ash Shamaliyah	SW17 Skaraborgs Lan
SP57 Extremadura	SU31 Ash Sharqiyah	SW18 Sodermanlands Lan
SP58 Galicia	SU32 Bahr al Ghazal	SW26 Stockholms Lan
SP07 Islas Baleares	SU33 Darfur	SW21 Uppsala Lan
SP27 La Rioja	SU34 Kurdufan	SW22 Varmlands Lan
SP29 Madrid		SW23 Vasterbottens Lan
SP31 Murcia	NS SURINAME	SW24 Vasternorrlands Lan
SP32 Navarra	NS10 Brokopondo	SW25 Vastmanlands Lan
SP59 Pais Vasco	NS11 Commewijne	
SP60 Valenciana	NS12 Coronie	* SZ SWITZERLAND
	NS13 Marowijne	SZ01 Aargau
PG SPRATLY ISLANDS	NS14 Nickerie	SZ02 Ausser-Rhoden
	NS15 Para	SZ03 Basel-Landschaft
CE SRI LANKA	NS16 Paramaribo	SZ04 Basel-Stadt
CE01 Amparai	NS17 Saramacca	SZ05 Bern
CE02 Anuradhapura	NS18 Sipaliwini	SZ06 Fribourg
CE03 Badulla	NS19 Wanica	SZ07 Geneve
CE04 Batticaloa		SZ08 Glarus
CE23 Colombo	SV SVALBARD	SZ09 Graubunden
CE06 Galle		SZ10 Inner-Rhoden
CE24 Gampaha	WZ SWAZILAND	SZ26 Jura
CE07 Hambantota	WZ01 Hhohho	SZ11 Luzern
CE25 Jaffna	WZ02 Lubombo	SZ12 Neuchatel
CE09 Kalutara	WZ03 Manzini	SZ13 Nidwalden

SZ14 Obwalden	TZ13 Pemba North	TH31 Narathiwat
SZ15 Sankt Gallen	TZ20 Pemba South	TH17 Nong Khai
SZ16 Schaffhausen	TZ02 Pwani	TH38 Nonthaburi
SZ17 Schwyz	TZ24 Rukwa	TH39 Pathum Thani
SZ18 Solothurn	TZ14 Ruvuma	TH69 Pattani
SZ19 Thurgau	TZ15 Shinyanga	TH61 Phangnga
SZ20 Ticino	TZ16 Singida	TH66 Phatthalung
SZ21 Uri	TZ17 Tabora	TH41 Phayao
SZ22 Valais	TZ18 Tanga	TH14 Phetchabun
SZ23 Vaud	TZ21 Zanzibar Central/South	TH56 Phetchaburi
SZ24 Zug	TZ22 Zanzibar North	TH13 Phichit
SZ25 Zurich	TZ25 Zanzibar Urban/West	TH12 Phitsanulok
	TZ19 Ziwa Magharibi	TH36 Phra Nakhon Si Ayutthaya
SY SYRIA		TH07 Phrae
SY01 Al Hasakah	TH THAILAND	TH62 Phuket
SY02 Al Ladhiqiyah	TH35 Ang Thong	TH45 Prachin Buri
SY03 Al Qunaytirah	TH28 Buriram	TH57 Prachuap Khiri Khan
SY04 Ar Raqqa	TH44 Chachoengsao	TH59 Ranong
SY05 As Suwayda'	TH32 Chai Nat	TH52 Ratchaburi
SY06 Dar`a	TH26 Chaiyaphum	TH47 Rayong
SY07 Dayr az Zawr	TH48 Chanthaburi	TH25 Roi Et
SY13 Dimashq	TH02 Chiang Mai	TH20 Sakon Nakhon
SY09 Halab	TH03 Chiang Rai	TH42 Samut Prakan
SY10 Hamah	TH46 Chon Buri	TH55 Samut Sakhon
SY11 Hims	TH58 Chumphon	TH54 Samut Songkhram
SY12 Idlib	TH23 Kalasin	TH37 Saraburi
SY08 Rif Dimashq	TH11 Kamphaeng Phet	TH67 Satun
SY14 Tartus	TH50 Kanchanaburi	TH33 Sing Buri
	TH22 Khon Kaen	TH30 Sisaket
TI TAJIKISTAN	TH63 Krabi	TH68 Songkhla
	TH40 Krung Thep	TH09 Sukhothai
TZ TANZANIA	TH06 Lampang	TH51 Suphan Buri
TZ01 Arusha	TH05 Lamphun	TH60 Surat Thani
TZ23 Dar es Salaam	TH18 Loei	TH29 Surin
TZ03 Dodoma	TH34 Lop Buri	TH08 Tak
TZ04 Iringa	TH01 Mae Hong Son	TH65 Trang
TZ05 Kigoma	TH24 Maha Sarakham	TH49 Trat
TZ06 Kilimanjaro	TH43 Nakhon Nayok	TH71 Ubon Ratchathani
TZ07 Lindi	TH53 Nakhon Pathom	TH19 Udon Thani
TZ08 Mara	TH21 Nakhon Phanom	TH15 Uthai Thani
TZ09 Mbeya	TH27 Nakhon Ratchasima	TH10 Uttaradit
TZ10 Morogoro	TH16 Nakhon Sawan	TH70 Yala
TZ11 Mtwara	TH64 Nakhon Si Thammarat	TH72 Yasothon
TZ12 Mwanza	TH04 Nan	

TO	TOGO		TU12	Bingol
TO01	Amlame	PS TRUST TERRITORY OF THE	TU13	Bitlis
TO02	Aneho	PACIFIC ISLANDS	TU14	Bolu
TO03	Atakpame	(PALAU)	TU15	Burdur
TO15	Badou	TS TUNISIA	TU16	Bursa
TO04	Bafilo	TS14 Al Kaf	TU17	Canakkale
TO05	Bassar	TS15 Al Mahdiyah	TU18	Cankiri
TO06	Dapaong	TS16 Al Munastir	TU19	Corum
TO07	Kante	TS02 Al Qasrayn	TU20	Denizli
TO08	Klouto	TS03 Al Qayrawan	TU21	Diyarbakir
TO14	Kpagouda	TS26 Aryanah	TU22	Edirne
TO09	Lama-Kara	TS17 Bajah	TU23	Elazig
TO10	Lome	TS18 Banzart	TU24	Erzincan
TO11	Mango	TS27 Bin `Arus	TU25	Erzurum
TO12	Niamtougou	TS06 Jundubah	TU26	Eskisehir
TO13	Notse	TS28 Madanin	TU27	Gaziantep
TO16	Sotouboua	TS19 Nabul	TU28	Giresun
TO17	Tabligbo	TS29 Qabis	TU69	Gumushane
TO19	Tchamba	TS10 Qafsah	TU70	Hakkari
TO20	Tchaoudjo	TS31 Qibili	TU31	Hatay
TO18	Tsevie	TS32 Safaqis	TU32	Icel
TO21	Vogan	TS33 Sidi Bu Zayd	TU33	Isparta
		TS22 Silyanah	TU34	Istanbul
TL	TOKELAU	TS23 Susah	TU35	Izmir
		TS34 Tatawin	TU46	Kahraman Maras
TN	TONGA	TS35 Tawzar	TU78	Karaman
TN01	Ha`apai	TS36 Tunis	TU36	Kars
TN02	Tongatapu	TS37 Zaghwan	TU37	Kastamonu
TN03	Vava`u		TU38	Kayseri
		TU TURKEY	TU79	Kirikkale
TD	TRINIDAD AND TOBAGO	TU01 Adana	TU39	Kirklareli
TD01	Arima	TU02 Adiyaman	TU40	Kirsehir
TD02	Caroni	TU03 Afyon	TU41	Kocaeli
TD03	Mayaro	TU04 Agri	TU71	Konya
TD04	Nariva	TU75 Aksaray	TU43	Kutahya
TD05	Port-of-Spain	TU05 Amasya	TU44	Malatya
TD06	Saint Andrew	TU68 Ankara	TU45	Manisa
TD07	Saint David	TU07 Antalya	TU72	Mardin
TD08	Saint George	TU08 Artvin	TU48	Mugla
TD09	Saint Patrick	TU09 Aydin	TU49	Mus
TD10	San Fernando	TU10 Balikesir	TU50	Nevsehir
TD11	Tobago	TU76 Batman	TU73	Nigde
TD12	Victoria	TU77 Bayburt	TU52	Ordu
TE	TROMELIN ISLAND	TU11 Bilecik	TU53	Rize



TU54	Sakarya	UP09	Khmel'nyts'ka Oblast'	UK15	Essex
TU55	Samsun	UP10	Kirovohrads'ka Oblast'	UK16	Gloucester
TU74	Siirt	UP11	Krym, Respublika	UK17	Greater London
TU57	Sinop	UP12	Kyyiv, Misto	UK18	Greater Manchester
TU80	Sirnak	UP13	Kyyivs'ka Oblast'	UK19	Hampshire
TU58	Sivas	UP14	Luhans'ka Oblast'	UK20	Hereford and Worcester
TU59	Tekirdag	UP15	L'vivs'ka Oblast'	UK21	Hertford
TU60	Tokat	UP16	Mykolayivs'ka Oblast'	UK22	Humberside
TU61	Trabzon	UP17	Odes'ka Oblast'	UK23	Isle of Wight
TU62	Tunceli	UP18	Poltavs'ka Oblast'	UK24	Kent
TU63	Urfa	UP19	Rivnens'ka Oblast'	UK25	Lancashire
TU64	Usak	UP20	Sevastopol', Misto	UK26	Leicester
TU65	Van	UP21	Sums'ka Oblast'	UK27	Lincoln
TU66	Yozgat	UP22	Ternopil's'ka Oblast'	UK28	Merseyside
TU67	Zonguldak	UP23	Vinnyts'ka Oblast'	UK29	Norfolk
		UP24	Volyns'ka Oblast'	UK31	Northampton
TX	TURKMENISTAN	UP25	Zakarpats'ka Oblast'	UK32	Northumberland
		UP26	Zaporiz'ka Oblast'	UK30	North Yorkshire
TK	TURKS AND CAICOS ISLANDS	UP27	Zhytomyrs'ka Oblast'	UK33	Nottingham
				UK34	Oxford
		TC	UNITED ARAB EMIRATES	UK35	Shropshire
TV	TUVALU	TC01	Abu Zaby	UK36	Somerset
		TC02	`Ajman	UK37	South Yorkshire
UG	UGANDA	TC04	Al Fujayrah	UK38	Stafford
UG05	Busoga	TC06	Ash Shariqah	UK39	Suffolk
UG18	Central	TC03	Dubayy	UK40	Surrey
UG20	Eastern	TC05	Ra's al Khaymah	UK41	Tyne and Wear
UG08	Karamoja	TC07	Umm al Qaywayn	UK42	Warwick
UG21	Nile			UK43	West Midlands
UG22	North Buganda	* UK	UNITED KINGDOM	UK44	West Sussex
UG23	Northern	UK01	Avon	UK45	West Yorkshire
UG12	South Buganda	UK02	Bedford	UK46	Wiltshire
UG24	Southern	UK03	Berkshire	UK52	Antrim
UG25	Western	UK04	Buckingham	UK53	Ards
		UK05	Cambridge	UK54	Armagh
* UP	UKRAINE	UK06	Cheshire	UK55	Ballymena
UP01	Cherkas'ka Oblast'	UK07	Cleveland	UK56	Ballymoney
UP02	Chernihivs'ka Oblast'	UK08	Cornwall	UK57	Banbridge
UP03	Chernivets'ka Oblast'	UK09	Cumbria	UK58	Belfast
UP04	Dnipropetrovs'ka Oblast'	UK10	Derby	UK59	Carrickfergus
UP05	Donets'ka Oblast'	UK11	Devon	UK60	Castlereagh
UP06	Ivano-Frankivs'ka Oblast'	UK12	Dorset	UK61	Coleraine
UP07	Kharkivs'ka Oblast'	UK13	Durham	UK62	Cookstown
UP08	Khersons'ka Oblast'	UK14	East Sussex	UK63	Craigavon

UK64 Down	* US11 District of Columbia	UY URUGUAY
UK65 Dungannon	* US12 Florida	UY01 Artigas
UK66 Fermanagh	* US13 Georgia	UY02 Canelones
UK67 Larne	* US15 Hawaii	UY03 Cerro Largo
UK68 Limavady	* US16 Idaho	UY04 Colonia
UK69 Lisburn	* US17 Illinois	UY05 Durazno
UK70 Londonderry	* US18 Indiana	UY06 Flores
UK71 Magherafelt	* US19 Iowa	UY07 Florida
UK72 Moyle	* US20 Kansas	UY08 Lavalleja
UK73 Newry and Mourne	* US21 Kentucky	UY09 Maldonado
UK74 Newtownabbey	* US22 Louisiana	UY10 Montevideo
UK75 North Down	* US23 Maine	UY11 Paysandu
UK76 Omagh	* US24 Maryland	UY12 Rio Negro
UK77 Strabane	* US25 Massachusetts	UY13 Rivera
UK78 Borders	* US26 Michigan	UY14 Rocha
UK79 Central	* US27 Minnesota	UY15 Salto
UK80 Dumfries and Galloway	* US28 Mississippi	UY16 San Jose
UK81 Fife	* US29 Missouri	UY17 Soriano
UK82 Grampian	* US30 Montana	UY18 Tacuarembó
UK83 Highland	* US31 Nebraska	UY19 Treinta y Tres
UK84 Lothian	* US32 Nevada	
UK85 Orkney	* US33 New Hampshire	UZ UZBEKISTAN
UK86 Shetland	* US34 New Jersey	
UK87 Strathclyde	* US35 New Mexico	NH VANUATU
UK88 Tayside	* US36 New York	NH05 Ambrym
UK89 Western Isles	* US37 North Carolina	NH06 Aoba/Maewo
UK90 Clwyd	* US38 North Dakota	NH07 Banks/Torres
UK91 Dyfed	* US39 Ohio	NH08 Efate
UK92 Gwent	* US40 Oklahoma	NH09 Epi
UK93 Gwynedd	* US41 Oregon	NH10 Malakula
UK94 Mid Glamorgan	* US42 Pennsylvania	NH11 Paama
UK95 Powys	* US44 Rhode Island	NH12 Pentecote
UK96 South Glamorgan	* US45 South Carolina	NH13 Santo/Malo
UK97 West Glamorgan	* US46 South Dakota	NH14 Shepherd
	* US47 Tennessee	NH15 Tafea
* US UNITED STATES	* US48 Texas	
* US01 Alabama	* US49 Utah	VT VATICAN CITY
* US02 Alaska	* US50 Vermont	
* US04 Arizona	* US51 Virginia	VE VENEZUELA
* US05 Arkansas	* US53 Washington	VE01 Amazonas
* US06 California	* US54 West Virginia	VE02 Anzoategui
* US08 Colorado	* US55 Wisconsin	VE03 Apure
* US09 Connecticut	* US56 Wyoming	VE04 Aragua
* US10 Delaware		VE05 Barinas

VE06 Bolivar	VM63 Kon Tum	WS03 Atua
VE07 Carabobo	VM22 Lai Chau	WS04 Fa`asaleleaga
VE08 Cojedes	VM23 Lam Dong	WS05 Gaga`emauga
VE09 Delta Amacuro	VM39 Lang Son	WS07 Gagaifomauga
VE24 Dependencias Federales	VM64 Lao Cai	WS08 Palauli
VE10 Distrito Federal	VM24 Long An	WS09 Satupa`itea
VE11 Falcon	VM48 Minh Hai	WS10 Tuamasaga
VE12 Guarico	VM65 Nam Ha	WS06 Va`a-o-Fonoti
VE13 Lara	VM66 Nghe An	WS11 Vaisigano
VE14 Merida	VM67 Ninh Binh	
VE15 Miranda	VM68 Ninh Thuan	YM YEMEN
VE16 Monagas	VM69 Phu Yen	YM01 Abyan
VE17 Nueva Esparta	VM70 Quang Binh	YM02 `Adan
VE18 Portuguesa	VM29 Quang Nam-Da Nang	YM07 Al Bayda'
VE19 Sucre	VM71 Quang Ngai	YM08 Al Hudaydah
VE20 Tachira	VM30 Quang Ninh	YM09 Al Jawf
VE21 Trujillo	VM72 Quang Tri	YM03 Al Mahrah
VE22 Yaracuy	VM73 Soc Trang	YM10 Al Mahwit
VE23 Zulia	VM49 Song Be	YM11 Dhamar
	VM32 Son La	YM04 Hadramawt
VM VIETNAM	VM33 Tay Ninh	YM12 Hajjah
VM43 An Giang	VM35 Thai Binh	YM13 Ibb
VM53 Ba Ria-Vung Tau	VM34 Thanh Hoa	YM06 Lahij
VM02 Bac Thai	VM74 Thua Thien	YM14 Ma'rib
VM03 Ben Tre	VM37 Tien Giang	YM05 Shabwah
VM54 Binh Dinh	VM75 Tra Vinh	YM15 Sa`dah
VM55 Binh Thuan	VM76 Tuyen Quang	YM16 San`a'
VM56 Can Tho	VM77 Vinh Long	YM17 Ta`izz
VM05 Cao Bang	VM50 Vinh Phu	
VM44 Dac Lac	VM78 Yen Bai	CG ZAIRE
VM45 Dong Nai		CG01 Bandundu
VM46 Dong Thap	* VQ VIRGIN ISLANDS	CG08 Bas-Zaire
VM57 Gia Lai		CG02 Equateur
VM11 Ha Bac	WQ WAKE ISLAND	CG09 Haut-Zaire
VM58 Ha Giang		CG03 Kasai-Occidental
VM51 Ha Noi	WF WALLIS AND FUTUNA	CG04 Kasai-Oriental
VM59 Ha Tay		CG06 Kinshasa
VM60 Ha Tinh	WE WEST BANK	CG07 Kivu
VM12 Hai Hung		CG05 Shaba
VM13 Hai Phong	WI WESTERN SAHARA	
VM52 Ho Chi Minh		G1ZA ZAMBIA
VM61 Hoa Binh	WS WESTERN SAMOA	ZA02 Central
VM62 Khanh Hoa	WS01 A`ana	ZA08 Copperbelt
VM47 Kien Giang	WS02 Aiga-i-le-Tai	ZA03 Eastern

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ZA04	Luapula	ZI01	Manicaland	ZI08	Masvingo
ZA09	Lusaka	ZI03	Mashonaland Central		
ZA05	Northern	ZI04	Mashonaland East	TW	TAIWAN
ZA06	North-Western	ZI05	Mashonaland West	TW01	Fu-chien
ZA07	Southern	ZI06	Matabeleland North	TW02	Kao-hsiung
ZA01	Western	ZI07	Matabeleland South	TW03	T'ai-pei
ZI	ZIMBABWE	ZI02	Midlands	TW04	T'ai-wan

**Appendix CC. ACQUIRE Field Name Codes**

Field Name	Remark Abbreviation
Grade	GRADE
Purity	PURITY
Formulation	FO
Characteristics	CHAR
Radiolabel	RADIO
Carrier or Solvent	CARRIER
Solvent Grade	SOLVGRADE
Solvent Purity	SOLVPURITY
Solvent Formulation	SOLVFO
Solvent Characteristics	SOLVCHAR
Media	FW,SW
Location	LAB,FIELD
Organism Source	SOURCE
Organism Char	LIFESTG
Gender	SEX
Control	CONTR
Test Number	TESTID
Test Method	TMETH
Study Type	STYPE
Number of Doses	DNUM
Concentrations at each dose and Unit	DOSES
Intake Rate & Unit	INTAKE
Steady State	STST
Response Site	SITE
Effect	In EE Remark

Trend	TREND
Endpt	In EE Remark
Companion Endpoint	COMPEP
Measurement	MSMT
Effect Percent	EFCT%
Signif	SIGNIF
Level	LEVEL
Concentration	CONC
BCF	BCF
Observed Time	OTIME
Exposure Type	TYPE
Exposure Time & Unit	ETIME
Method Conc	CONC
Temperature	TEMP
Hardness	HARD
Alkalinity	ALK
Dissolved Oxygen	DO
Humic acid & Units	HMA
Sodium & Units	NA
Chlorine & Units	CL
Potassium & Units	POT
Magnesium & Units	MG
Sulfate and Units	SO4
Sulfur and Units	SULF
pH	PH
Salinity	SALIN
Conductivity	COND
Organic C	ORG C
Dissolved	DIC

Inorganic Carbon & Units	
% Lipid	LD
Initial Weight	WTINT
Weight at time of result	WTAT
Dry or Wet Weight %	DW
Habitat Descr	HAB
Substrate Info	SUBSTR
Water Depth	DEPTH
Location	LOC
Sta/Pro/Country	NONE
Latitude	LAT
Longitude	LONG
AP Type	AP TY
AP Frequency	AP FREQ
AP Rate	AP RATE
Half Life	HALF
AP Season	AP SEAS
AP Date	AP DATE

## Appendix DD. Terretox Field Name Codes

### I. Quality Assurance Parameters

Field Name	Coding Sheet Abbreviation	Remarks Abbreviation
Reference Number	REF #, AUTHOR, YEAR	none
Total Tests	TOTAL TESTS	none
Reviewer/Date	REVIEWER, DATE	none
QA Date/Initials	QA DATE, INITIALS	none
TestNumber	TEST ID	none

### II. Test Chemical Parameters

Field Name	Coding Sheet Abbreviation	Remarks Abbreviations
Chemical Name, Type	TEST, POSITIVE CONTROL, CARRIER	none, PC CARRIER
Grade	GRADE	GRADE
Purity	PURITY	none
Formulation	FORMULATION	FO
Comments	CHARACTERSTICS	CHAR
Radiolabel	RADIOLAB	RADIO
CAS number	CAS #	none

### III. Test Information

Field Name	Coding Sheet Abbreviation	Remarks Abbreviations
Species Number/Latin Name	SPECIES #/LATIN NAME	none
Organism Source	ORG SOURCE	SOURCE



Field Name	Coding Sheet Abbreviation	Remarks Abbreviations
Lifestage/Age	LIFESTG/AGE	LIFESTG/ AGE
Organism Characteristics	ORG CHAR	OCHAR
Test Location	TEST LOCATION	LOC
Exposure Type	EXPO TYPE	TYPE
Control	CONTROL TYPE	CONTR
Number of Doses	DOSE NUM	DNUM
Application Frequency	APPL FREQUENCY	AP FREQ
Application Date	AP DATE	
Application Season	AP SEAS	
Application Rate	AP RATE	
Exposure Duration	EXPOSURE DURATION	ETIME
Study Duration	STUDY DURATION	STIME
Study Type	STYPE	
Test Method	TMETH	
Trend	TREND	
Media Type	MEDIA TYPE	MEDIA
Soil Type	SOIL TYPE	SOIL
Soil Texture	SOIL TEXTURE	TEXTURE
Temperature	TEMP	
Media pH	MEDIA PH	pH
Media Organic Matter	MEDIA ORGANIC MATTER	OM
Media Moisture	MEDIA MOISTURE	MOIST
Media CEC	MEDIA CEC	CEC

Field Name	Coding Sheet Abbreviation	Remarks Abbreviations
Soil Concentration Measured/ Concentration measured on Dry or Wet Basis	SOIL CONC MEASURED DRY-WET WEIGHT	none
Remarks	REMARKS	none
Experimental Design	---	EDES
Habitat	HAB	
Location	LOC	
Habitat Code	HABCODE	
Geographic Code	GEO	
Latitude	LAT	
Longitude	LONG	
Effect Percent	EFCT%	
Other Effects	none	OEF

**IV. Exposure Information**

Field Name	Coding Sheet Abbreviation	Remarks Abbreviation
Dose Number	DOSE NO	none
Dose ID	DOSE ID	none
Sample Number	N	none
Gender	SEX	SEX
Concentrations at each dose and Unit	DOSES	
Exposure Dose and Unit	DOSE/UNIT	DOSE/ DUNIT
Concentration Type	CONCTYPE	
Intake Rate and Unit	INTAKE	
Ion	ION	ION
Chemical Analysis Method	METHOD	ANALYSIS
Steady State	STST	
Remark Number	RN	none

Field Name	Coding Sheet Abbreviation	Remarks Abbreviation
Remarks	REMARKS	none

## V. Results Information

Field Name	Coding Sheet Abbreviation	Remarks Abbreviation
Dose Number/ID	DOSE NO/ID	none
Sample Number and Unit	N/UNIT	SAMPN/ NUNIT
Observation Time	O	OTIME
Effect	EFFECT	EFCT
Effect Measurement	MEASMENT	MSMT
Endpoint/Assigned	ENDPT/ASG	ENDPT
Result Set	R	none
Companion Endpoint	COMPEP	
Statistical Significance	SIG/NSIG	SIGNIF
Level	LEVEL	none
Paper/Reviewer Assigned Data	P R	none
Response Site	RESP SITE	RSITE
Observed Response Value/ Unit	OBSERV RESPONSE VALUE/UNIT	RVALUE RUNIT
Initial Weight	WTINT	
Weight at time of result	WTAT	
Dry or Wet Weight	DW %	DW
Percent Lipid	%LIPID	LD
Remark Number	RN	none
Remarks	REMARKS	none

## Appendix EE. Organic Matter Type and Units

### Organic Matter Types

Code	Definition
ASH	Ash Free Dry Mass
C	Carbon
C:N	Carbon to Nitrogen Ratio
CPON	Carbon Particulate Organic Matter
Cox	Oxidized Carbon
DOC	Dissolved Organic Carbon
HUM	Humus
LOI	Loss On Ignition
N	Nitrogen
NR	Not Reported
OC	Organic Carbon
OM	Organic Matter
POC	Particulate Organic Carbon
POM	Particulate Organic Matter
TOC	Total Organic Carbon
peat	Peat

### Organic Matter Units

Code	Definition
%	percent
NR	not reported
cmol/kg	centimoles per kilogram
g	grams
g/100g	grams per 100 grams
g/kg	grams per kilogram
mg/g soil	milligrams per gram soil
mg/100g soil	milligrams per 100 grams of soil
mg/kg soil	milligrams per kilogram soil
uM	microMolar
umol/g LIT	micromoles per gram litter
umol/L	micromoles per liter

## Appendix FF. Cation Exchange Capacity Units

Dose	Definition
NR	not reported
cmol/kg	centimoles per kilogram soil
cmol+/kg	centimoles + ions per kilogram soil
cmol P+/kg	centimoles P+ per kilogram soil
me/100g	milliequivalents per 100 grams s
meq	milliequivalents
meq A/100 g	milliequivalents NH <sub>4</sub> per 100 g
meq mg/g	milliequivalent milligrams per g
meq/100g	milliequivalents per 100 grams s
meq/kg	milliequivalents per kilogram
mmol/100g	millimoles per 100 grams soil
mmol/kg	millimoles per kilogram soil
mmol K+/kg	millimoles K+ per kilogram soil
mval/100g	millival per 100 grams (mval=ppm*(ion charge)/(atomic weight))

## Appendix GG. AQUIRE Concentration Types

Code	Description	Definition
Organic		
A	Active ingredient	Chemical substance in a product that is responsible for the pesticidal (toxic) effect (Ware, 1978). Reported as "A" when the author refers to the concentration as active ingredient, active principle or various grades of reagents (ie., Analytical, Reagent or Technical). When coding, a value in the publication may be reported as "Al kg/ha" or "kg Al/ha"; in AQUIRE this type of value is reported as 'A =' for <u>CONC TYPE</u> , with units as kg/ha. For example, 100 kg Al/ha is reported as A = 100 kg/ha.
F	Formulation	Way in which basic pesticide (toxicant) is prepared for practical use (Ware, 1978). Generally reserved for commercial preparation prior to actual use and does not include the final dilution (Insect-Pest Management and Control, 1971) (e.g.; Baythroid, 2,4-D). Also included in this category are organic compounds with no pesticidal activity (e.g.; PCB, dioxin).
Metal/Organometals		
D	Dissolved	Those constituents of an unacidified sample that pass through a 0.45 um membrane filter (e.g. soluble metal) (APHA et.al. 1992).
L	Labile	The labile or free ion metal concentration determined by various analytical methods. When coding, the specific labile forms or complexes are not differentiated
T	Total	The concentration of metals determined on an unfiltered sample after vigorous digestion, or the sum of the concentrations of metals in both dissolved and suspended fractions ( APHA et.al. 1992). Heavy metals and single elements (e.g. Na, Cl, Br) are coded as T.
Inorganic non-metals		
T	Total	The dissociated, charged form of nitrogen or hydrogen related chemicals. This can take on numerous forms, e.g.; ammonium (NH <sub>4</sub> <sup>+</sup> ), nitrite (NO <sub>2</sub> <sup>-</sup> ), etc. (Rand and Petrocelli, 1985).T is the default for publications that do not state whether Total or Unionized concentrations are reported.
U	Unionized	The undissociated, uncharged form of ammonia or hydrogen sulfide. The ammonia molecule, NH <sub>3</sub> , is the unionized form. (In aqueous solution, ammonia assumes an equilibrium between NH <sub>3</sub> and NH <sub>4</sub> <sup>+</sup> .) The NH <sub>3</sub> is the toxic entity of the ammonia compound (Rand and Petrocelli, 1985).

## Appendix HH. ECOTOX Study Type Codes

Code	Name	Definition
ACUTE	Acute	Having a sudden onset, lasting a short time. Of a stimulus, severe enough to induce a response rapidly. Can be used to define either the exposure or the response to an exposure (effect). For clarity, the length of the exposure (short, medium, or long) and the nature of the effect end point (lethal or nonlethal) should be specified. The duration of an acute aquatic toxicity test is generally 4d or less and mortality is the response measured. (ECOTOX Website)
ACTELS	Acute Early Life Stage	These tests include continuous exposure of the early life stages which have a sudden onset of a response, lasting a short time. Of a stimulus, severe enough to induce a response rapidly. (ECOTOX)
CHRELS	Chronic Early Life Stage	These tests include continuous exposure of the early life stages which involve a stimulus that is lingering or continues for a long time; often signifies periods from several weeks to years, depending of the reproductive life cycle of the organism. (ECOTOX)
CHRONIC	Chronic	Involving a stimulus that is lingering or continues for a long time; often signifies periods from several weeks to years, depending of the reproductive life cycle of the aquatic species. Can be used to define either the exposure or the response to an exposure (effect). For clarity the length of the exposure and the nature of the effect end point should be specified. Chronic exposure typically induces a biological response of relatively slow progress and long continuance. The chronic aquatic toxicity test is used to study the effects of continuous, long-term exposure to a chemical or other potentially toxic material on organisms. (ECOTOX website)

Code	Name	Definition
ELS	Early Life Stage	These tests include continuous exposure of the early life stages (e.g., egg, embryo, larva, fry) of aquatic organisms to various concentrations of chemical for 1-2 months, depending on the species. (Rand and Petrocelli, 1985)
FLC	Full Life Cycle	A chronic (or full chronic) study in which all the significant life stages of an organism are exposed to a test material. Generally, a life cycle is from birth until the organism reproduces (Rand and Petrocelli, 1985)
PLC	Partial Life Cycle	The test organism is exposed to toxicant through part of the life cycle which includes life stages observed to be especially sensitive to chemical exposure (Rand and Petrocelli, 1985)
GEN	Generational	A study that encompasses multiple generations of the test organism (e.g. P, F1,F2) either exposed to a toxicant during different generations or exposure to one generation and results measured in subsequent generations.(ECOTOX)
SBACUTE	Subacute	Intermediate between acute and chronic, not quite being one or the other ( <a href="http://www.amershamhealth.com/public/glossary/s.shtml">http://www.amershamhealth.com/public/glossary/s.shtml</a> ). Adverse effects occurring as a result of repeated daily dosing of a chemical, or exposure to the chemical, for part of an organism's lifespan (usually not exceeding 10%). With experimental animals, the period of exposure may range from a few days to 6 months. ( <a href="http://www.bio.hw.ac.uk/edintox/glossall.htm">http://www.bio.hw.ac.uk/edintox/glossall.htm</a> )



## Appendix II. ECOTOX Test Method Codes

Code	Name	Citation
ASTM	American Society for Testing and Materials	Specific names of test methods include: FETAX American Society for Testing and Materials (ASTM). (Various years) . American Society for Testing and Materials. Annual Book of ASTM Standards. American Society for Testing and Materials, Philadelphia, PA. Information available on line at: <a href="http://www.astm.org">http://www.astm.org</a>
ECAN	Environment Canada	Various publications. Includes Environment Canada (1990). Biological Test Methods: Acute Lethality Test Using Daphnia spp. EPS 1/RM/11. Ottawa, ON. Information available on line at: <a href="http://www.mb.ec.gc.ca/">http://www.mb.ec.gc.ca/</a>
EEC	European Economic Community (EEC)	EEC.(1984) In 84/449/EEC: Commission Directive of 25 April 1984 adapting to technical progress for the sixth time council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification packing and labeling of dangerous substances. Official Journal of the European Communities L251, 27, p:155-159
EPAASTM	U.S.EPA and American Society for Testing and Materials	Used both U.S.EPA and ASTM methods when testing
EPASTD	United States Environmental Protection Agency and Standard Methods for the Examination of Water and Wastewater	Used both Standard Methods and U.S.EPA methods when testing
FAO	Food and Agriculture Organization of the United Nations	Various publications. Includes FAO (1977) Manual Methods in Aquatic Environment Research, Part-4 Bases for Selective Biological Tests to Evaluate Marine Pollution. PAO Fisheries Technical Paper 164. Information available on line at: <a href="http://www.fao.org/">http://www.fao.org/</a>
GLP	Good Laboratory Practices	published by the U.S. Department of Health, education and Welfare, Food and Drug Administration (1978) and the U.S.EPA (1980) Information available on line at: <a href="http://www.fda.gov/ora/compliance_ref/bimo/glp/default.htm">http://www.fda.gov/ora/compliance_ref/bimo/glp/default.htm</a>

Code	Name	Citation
OECD	Organization for Economic Cooperation and Development	Most Recent: OECD (2002). OECD Chemical Testing Guidelines - Health Effects. Organization for Economic Co-operation and Development. Information available on line at <a href="http://www.oecd.org/">http://www.oecd.org/</a>
OPPTS	Office of Prevention, Pesticides, and Toxic Substances Harmonized Test Guidelines	Most Recent: United States Environmental Protection Agency (USEPA). 2002. Office of Prevention , Pesticides, and Toxic Substances Harmonized Test Guidelines. Series 870 Health Effects Test. Information available on line at: <a href="http://www.epa.gov/opptsfrs/home/guidelin.htm">http://www.epa.gov/opptsfrs/home/guidelin.htm</a>
STDMETH	Standard Methods for the Examination of Water and Wastewater	Published jointly by: American Public Health Association, American Water Works Association and Water Pollution Control Federation (APHA,AWWA,WPCF). Various years Information available on line at: <a href="http://www.standardmethods.org/">http://www.standardmethods.org/</a>
STDOECD	Standard Methods and OECD	Used both Standard Methods and OECD methods when testing
UNEP	United Nations Environment Programme	Various publications. Includes: UNEP/FAO/IAEA (1989). Estimation of the Acute Lethal Toxicity of Pollutants to Marine Fish and Invertebrates. Reference Methods for Marine Pollution Studies, No.43. United Nations Environment Programme, Nairobi. Information available on line at: <a href="http://www.unep.ch/regionalseas/pubs/rsrm.htm">http://www.unep.ch/regionalseas/pubs/rsrm.htm</a>
USEPA	United States Environmental Protection Agency	Various Information available on line at: <a href="http://www.epa.gov/">http://www.epa.gov/</a>
WHO	World Health Organization	various publications. Includes: WHO. 1963. Criteria and meaning of tests for determining susceptibility or resistance of insects to insecticides. Technical Rep. Ser. N 265: 135-138. Information available on line at: <a href="http://www.who.int/en/">http://www.who.int/en/</a>