commentletters - Comment letters---Proposed Recycled Water Policy

From: Edo McGowan <edo_mcgowan@hotmail.com>
To: <commentletters@waterboards.ca.gov>, <owl@owlfoundation.net>
Date: Wednesday, December 17, 2008 7:58 PM
Subject: Comment letters---Proposed Recycled Water Policy

To: Water Resources Control Board
Fm: Dr Edo McGowan
Re: Comments on Recycled water Policy and Draft Staff Report

Nondisruption of genes that assure a smooth and faithful replication as well as correct developmental sequencing during embryogenesis is necessary to the survival of species, including man. Since endocrine disrupters do adveresely impact these critical genes and their sequences, the issue is of great importance and thus should not await later determinations. Once the political concrete of your decisions has indurated, it will be very difficult to jackhammer up the mistakes. As often done by lay decision makers who rely too directly on staff, mistakes are later rationalized but the damage continues. As previously demonstrated, the impact of endocrine disrupters within recycled water has been greatly underestimated and understated within the Draft Staff Report on the proposed Recycled Water Policy.

The material below is being sent to you to provide some clarification and also to alert your Board that there are papers in the peer reviewed literature that tend to raise serious questions about the validity of the Draft Staff Report and its claimed benign impacts of recycled water, especially if that water contains endocrine disrupters. Since the abstracts below do mention humans, it will be important for your Board to appreciate that many of the basic genes that control life are highly conserved across species. Thus what one sees in fish may well be seen in man. Again, I can not recommend too strongly the adherence to the precautionary principle.

Development, Vol 124, Issue 22 4661-4671, Copyright © 1997 by Company of Biologists

JOURNAL ARTICLES

maelstrom is required for an early step in the establishment of Drosophila oocyte polarity: posterior localization of grk mRNA

NJ Clegg, DM Frost, MK Larkin, L Subrahmanyan, Z Bryant and H Ruohola-Baker
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We describe a mutant, maelstrom, that disrupts a previously unobserved step in mRNA localization within the early oocyte, distinct from nurse-cell-to-oocyte RNA transport. Mutations in maelstrom disturb the localization of mRNAs for Gurken (a ligand for the Drosophila Egf receptor), Oskar and Bicoid at the posterior of the developing (stage 3-6) oocyte. maelstrom mutants display phenotypes detected in gurken loss-of-function mutants: posterior follicle cells with anterior cell fates, bicoid mRNA localization at both poles of the stage 8 oocyte and ventralization of the eggshell. These data are consistent with the suggestion that early posterior localization of gurken mRNA is essential for activation of the Egf receptor pathway in posterior follicle cells. Posterior localization of mRNA in stage 3-6 oocytes could therefore be one of the earliest known steps in the establishment of oocyte polarity. The maelstrom gene encodes a novel protein that has a punctate distribution in the cytoplasm of the nurse cells and the oocyte until the protein disappears in stage 7 of oogenesis.
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Endocrine disrupting compounds: effect of octylphenol on reproduction over three generations .
Theriogenology , Volume 55 , Issue 1 , Pages 131 - 150
I . Bøgh

Abstract

With the growing concern that environmental chemicals might impair human and animal fertility, it is important to investigate the possible influence of these substances on sexual differentiation and genital development of mammals. Many of these substances are suspected to interfere with endocrine processes, and exposure during critical periods of prenatal development might affect reproductive performance over several generations. Alkylphenols and their metabolites are lipophilic substances exerting apparent estrogenic action in in vitro and in vivo testing systems. With the widespread industrial use of alkylphenols, these are disseminated in the environment with sewage sludge, and domestic animals and humans are likely to be exposed via the food chain. Using the pig as an in vivo model, we studied the effect of intrauterine exposure to tertiary octylphenol (OP) on essential reproductive parameters over 3 generations. Sows were treated daily from D 23 to 85 of pregnancy with either 0, 10 or 1000 µg OP/kg body weight. Treatment with OP extended pregnancy length and induced basal cell proliferation in the cervical epithelium of the parental generation. In F1 offspring of sows treated with the low dosage of OP, onset of puberty was accelerated. Furthermore, when F1 gilts and F1 boars originating from sows treated with high dosages of OP were bred, the litter size was reduced. The results of the present study are compared with previous reports on estrogenicity of OP, and the usefulness of in vivo animal or embryo models for the evaluation of possible consequences of human exposure to endocrine disrupting compounds is discussed. Furthermore, possible consequences of exposure to endocrine disrupting compounds for the embryo transfer industry are addressed.

Environmental Estrogenic Effects of Alkylphenol Ethoxylates

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Published in: Critical Reviews in Toxicology, Volume 26, Issue 3 1996 , pages 335 - 364

Subject: Toxicology;

Abstract

Alkylphenol ethoxylates (APEs) and related compounds recently have been reported to be estrogenic because it has been demonstrated in laboratory studies that they mimic the effects of estradiol both *in vitro* and *in vivo.* Chemicals referred to as "environmental estrogens" are suspected of causing health effects in both humans and wildlife through disruption of the endocrine system. In this review, the occurrence, environmental fate, and biological effects of APEs are presented. To provide understanding of the potential for endocrine disruption due to environmental estrogens, the physiology of estrogens in mammals and fish is also reviewed. The estrogenic potency of other environmental estrogens is compared to the potency of APE degradation products. The reproductive effects of estrogenic compounds are considered when evaluating the potential health effects of APEs. Given the reported environmental concentrations and bioconcentration factors of APE products, the potential for these compounds to produce estrogenic effects in the environment appears low. Although questions concerning the physiological effects of APEs and other environmental estrogens remain unanswered, there are indications that research is in progress that will lead to better understanding of the risks to humans and wildlife.