

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION**

**BOARD ORDER NO. R6V-2004-0008  
WDID NO. 6B360210001**

REVISED WASTE DISCHARGE REQUIREMENTS

FOR

**IMC CHEMICALS, INC.,  
ARGUS BOILER ASH LANDFILLS 1 AND 2**

San Bernardino County

The California Regional Water Quality Control Board, Lahontan Region (Regional Board) finds:

1. Discharger

On October 31, 2003, IMC Chemicals, Inc. (IMCC), submitted a Report of Waste Discharge (ROWD) and Joint Technical Document (JTD) requesting revised Waste Discharge Requirements (WDRs) for the Argus Boiler Ash Landfill to include an additional authorized disposal location. The information submitted constitutes a complete ROWD for expanding disposal of inert ash wastes and furnace slag to an existing borrow pit. For the purposes of this Order, IMCC is referred to herein as the "Discharger."

2. Facility

The Discharger operates a mineral production plant in Argus, California that includes two solid fuel (coal) boilers at an electrical power and process steam cogeneration plant in Trona near the west side of Searles Dry Lake. The boilers generate an annual average of 46,961 cubic yards of inert waste consisting of fly ash, bottom ash, and pyrites (boiler ash waste). The Discharger also generates furnace slag (pyro slag – anhydrous sodium tetraborate slag) during its manufacture of anhydrous sodium tetraborate and has previously been authorized to discharge up to 100 tons per year of this non-hazardous inert waste to an existing landfill at the Argus mineral production plant.

For the purposes of this Order, the "Facility" consists of two disposal locations: The existing unlined, unclassified Argus Boiler Ash Landfill (Landfill 1), and the proposed borrow pit disposal site (Landfill 2). Landfill 1 receives inert boiler ash and furnace slag wastes from the Discharger's cogeneration plant. Landfill 2 will also be unlined and unclassified and will also receive non-hazardous inert boiler fly ash and furnace slag wastes.

3. Order History

New WDRs for Landfill 1 (Board Order No. R6V-2003-024) were adopted on June 11, 2003. Landfill 1 was previously operating under a waiver of WDRs issued January 30, 1992 and a waiver extension issued February 3, 1997. The waiver was terminated on January 1, 2003 pursuant to California Water Code (CWC) Section 13269.

4. Reason for Action

The Regional Board is revising Board Order No. R6V-2003-024, WDRs for Landfill 1 to add Landfill 2 as a second authorized disposal site.

5. Facility Location

Landfill 1 is located west of the Community of Trona, approximately 1,000 feet northwest of the Argus Plant on property owned by IMCC within Sections 7 and 18, T25S, R43E, MDB&M as shown on Attachment "A" which is made a part of this Order. Landfill 2 is located approximately 1500 feet south of Landfill 1 on IMCC property in the east half of Section 18, T25S, R43E MDB&M as shown on Attachment "A."

6. Description of Discharge and Facility

The Discharger currently discharges its boiler ash waste and furnace slag to existing Landfill 1 at the Argus mineral production plant and proposes to also discharge boiler ash waste and furnace slag to Landfill 2, an existing borrow pit located approximately 1500 feet south of Landfill 1. Landfill 1 covers approximately 42.4 acres and is an unclassified, unlined waste management unit (WMU). Landfill 2 is an existing borrow pit that covers 16 acres and is an unclassified, unlined WMU.

The Discharger operates a chemical plant and burns coal at two solid fuel boilers to generate electricity and provide steam. As part of the combustion process, non-hazardous inert ash waste is generated. The boiler ash waste consists of a combination of boiler fly ash, bottom ash and pyrites. Boiler fly ash is the small particle ash collected in boiler air emission control equipment. Bottom ash is granular in nature and comes from the bottom of the boiler. Pyrite is iron sulfite mineral material that is rejected by the coal grinding equipment. IMCC generates and disposes of approximately 95 tons of these wastes per day.

The Discharger also operates calciners and furnaces to produce anhydrous sodium tetraborate. The refined borax is fed through rotary drum-type calciners to remove a portion of its water and become calcined borax (a less-hydrated form of sodium tetraborate). The calcined borax is fed to the gas furnace to drive off the remaining water and to be melted. Anhydrous sodium tetraborate dust in the furnace exhaust solidifies as furnace slag. During the maintenance activities for the furnaces, approximately 100 tons per year of furnace slag are generated. The slag is inert and non-hazardous and ranges from large glassy chunks of material measuring inches across to small granular particles having the consistency of sand. The slag material is also deposited at the Facility.

7. Ash Handling and Discharge Operations

Prior to disposal, the boiler fly ash is stored dry in an ash silo. The bottom ash is stored wet in an ash decanting tank. The ash is then hauled to authorized disposal sites in trucks. The ash is discharged to unlined cells constructed at Landfill 1 or Landfill 2.

The ash handling and discharge operations consist of the following:

- a. During the dump truck loading process, a small amount of water (soft or brackish source) is mixed with the ash at a pugmill that is built into the silo storage structure. The percent moisture by weight is anticipated to be greater than 12 percent, however, it generally will not exceed 50 percent. Material greater than 50 percent moisture is allowed, as long as the discharge does not exceed the moisture holding capacity as defined in Section 20164 of Title 27, California Code of Regulations (CCR), either initially or as a result of waste management operations.
- b. The moist ash waste stream and other non-hazardous inert refractory/boiler waste are then spread across the floor of the WMU cell using a tractor, grader or bulldozer.
- c. Water is added to the top of ash material after grading as needed for dust control.

8. Authorized Disposal Sites

The unclassified, unlined WMUs at Landfill 1 and Landfill 2 are the only authorized disposal sites for the boiler ash waste and furnace slag, as described in Finding No. 6.

Landfill 1 is located west of the Community of Trona, approximately 1,000 feet northwest of the Argus Plant. This site is approximately 42.4 acres, and has a design life of 17 years. The total design capacity of Landfill 1 is 1.2 million cubic yards, with an average annual proposed usage of 70,000 cubic yards. The remaining capacity of the Landfill 1 is approximately 0.5 million cubic yards. The site will be developed in phases, wherein cells of layered, solidified ash will be built up to a height of approximately 20 feet above natural grade.

Landfill 2 is located approximately 1,500 feet south of the existing Landfill 1 site. Landfill 2 is 16 acres and has a projected design life of 8 years. The total design capacity of Landfill 2 is 408,000 cubic yards, with an average annual proposed disposal volume of 46,961 cubic yards.

9. Waste Designation

The waste ash discharged to the Facility is classified as non-hazardous and inert waste pursuant to Section 66261.3, Chapter 11, Division 4.5, Title 22, CCR and Section 20230 of Title 27, CCR, respectively. According to Section 20230(b) of Title 27, CCR, inert wastes may be discharged at unclassified WMUs.

This Order allows inclusion of non-hazardous furnace slag into the waste stream that may be discharged into the WMUs. The Discharger has provided information in the ROWD that the addition of the furnace slag as described in the ROWD into the ash waste stream at the Facility will not change the classification, have an adverse affect on the beneficial use of ground water, or present a threat to water quality.

The furnace slag is a by-product during the manufacture of anhydrous sodium tetraborate process. Degradable material in the raw material are destroyed during the high temperature

heating process and is not present in the furnace slag; therefore, the furnace slag is classified as an inert waste. The Discharger has conducted the following tests to determine that the furnace slag is non-hazardous and inert:

- a. Total Toxicity Limit Concentrations (TTLC) and Soluble Toxicity Limit Concentrations (STLC) Testing, and Toxicity Characteristic Leaching Procedure (TCLP); and
- b. Pollutant Characterization.

10. Vadose Zone Study

A study was conducted by ACE Cogeneration Company in 1997 for its ash disposal facility. The purpose of the study was to estimate the potential for leachate generation and contaminant transport through the vadose (unsaturated) zone. The ACE Cogeneration Ash disposal facility is similar and adjacent to the WMUs and the study can be used as reference. The results of the study indicate:

- a. the vertical limits of migration of liquids associated with the combined ash is a maximum of approximately nine feet below the unlined WMUs;
- b. the matrix potential (capillary suction) of the ash is high in comparison to the underlying native silt, sand, and gravel. This contrast in matrix potential (capillary suction) limits the potential for downward migration of liquids under unsaturated flow conditions;
- c. depth to the upper-most aquifer beneath the unlined WMUs is approximately 250 to 280 feet below ground surface. The quality of the ground water is poor, with total dissolved solids (TDS) exceeding 30,000 mg/L; and,
- d. the STLC analysis uses acid to simulate worse case leaching conditions. The pH of the combined ash is approximately 12 pH units. The alkaline nature of the fixated ash limits the leachability of metals.

Similar conditions to those in the study exist at the Facility. The apparent limited vertical migration of Constituents of Concern (COC) associated with the disposal of the fixated ash and the significant vadose zone thickness provides a conservative protection against migration of COCs to ground water from the unlined landfill.

11. Site Geology

The Facility is located in a closed structural basin on the mid portion of an alluvial fan which has been deposited at the foot of a large canyon emanating from the Argus Range west of the Facility. Surficial materials on the Facility consist of sands, silty sands, gravel and occasional cobbles and large boulders. The basin is in the southwest part of the Basin and Range geologic province of Southern California. Geologic units in the basin consist of alluvial deposits, saline deposits, and the surrounding bedrock complex. Within the basin, evaporite deposits alternate with mud beds. The thickness of the alluvial deposits ranges

from about 20 feet in the northern portion of the basin to thousands of feet in the center of the valley.

12. Site Hydrogeology

Brackish ground water within the alluvial deposits in the Searles Lake area occurs under both confined and unconfined conditions. Ground water in the uppermost aquifer in the alluvial deposits occurs at a depth of 280 feet below ground surface (bgs) beneath the Facility. The average annual precipitation in the vicinity of the Facility is about four inches.

The ground water in the vicinity of the Facility has a reported average TDS concentration of 33,200 mg/L.

13. Receiving Waters

The receiving waters are the ground waters of Searles Valley Hydrologic Area of the Trona Hydrologic Unit as set forth and defined in the Water Quality Control Plan (Basin Plan) for the Lahontan Region. The Department of Water Resources (DWR) designation for the Searles Valley Hydrologic Area is 621.10.

14. Lahontan Basin Plan

The Regional Board adopted a *Water Quality Control Plan for the Lahontan Region* (Basin Plan) which became effective on March 11, 1995. This Order implements the Basin Plan, as amended.

15. Beneficial Uses - Ground Water

The beneficial use of the ground waters of Searles Valley (Department of Water Resources Ground Water Basin No. 6-52), as set forth and defined in the Basin Plan, is:

Industrial Service Supply (IND).

16. California Environmental Quality Act (CEQA)

Adoption of the WDRs for Landfill 1 is exempt from the provisions of CEQA (Public Resources Code Section 21000 et seq.) in accordance with Section 15301 Title 14, California Code of Regulations (CCR) because these WDRs govern an existing facility that the Discharger is currently operating. On December 19, 2000, the County of San Bernardino Board of Supervisors adopted a Negative Declaration for the addition of the proposed IMCC Borrow Pit Waste Disposal Site (Landfill 2).

17. Financial Assurance

The Discharger has provided documentation that financial assurance has been developed for closure and subsequent maintenance of the Facility. This Order requires that the Discharger

demonstrate in an annual report that the amount of financial assurance is adequate, or revise the amount of financial assurance accordingly.

18. Notification of Interested Parties

The Regional Board has notified the Discharger and interested parties of its intent to adopt WDRs for this discharge.

19. Consideration of Public Comments

The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

**IT IS HEREBY ORDERED** that the Discharger shall comply with the following:

I. DISCHARGE SPECIFICATIONS

A. Discharge Requirements

1. The discharge of waste to the Facility shall be limited to the Argus boiler ash waste and furnace slag as described in the Findings of this Order.
2. The moisture content of the applied waste shall not exceed the moisture holding capacity as defined in Section 20164, Title 27, CCR, either initially or as a result of waste management operations.

B. Receiving Water Limitations

This discharge shall not cause a violation of any applicable Water Quality Standards for receiving water adopted by the Regional Board or the State Water Resources Control Board (SWRCB).

The discharge shall not cause the presence of the following substances or conditions in ground waters of the Trona Hydrologic Unit:

1. Chemical Constituents - Ground waters shall not contain concentrations of chemical constituents that adversely affect the water for beneficial uses.
2. Radioactivity – Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life, nor which result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal, or aquatic life.

3. Taste and Odors - Ground waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or that adversely affect beneficial uses.

C. General Requirements and Prohibitions

1. The discharge of waste which causes violation of any narrative Water Quality Objective (WQO) contained in the Basin Plan, including the Nondegradation Objective is prohibited.
2. The discharge of waste which causes violation of any numeric WQO contained in the Basin Plan is prohibited.
3. Where any numeric or narrative WQO contained in the Basin Plan is already being violated, the discharge of waste which causes further degradation or pollution is prohibited.
4. Surface flow or visible discharge of industrial or domestic wastewater from the disposal sites to adjacent land areas or surface waters is prohibited.
5. The discharge of waste except to the authorized disposal sites is prohibited.
6. The discharge shall not cause a pollution, as defined by Section 13050(l) of the California Water Code, or a threatened pollution.
7. The discharge shall not cause a nuisance as defined in Section 13050 of the California Water Code.
8. The Discharger shall remove and relocate any wastes which are discharged at the disposal sites in violation of these WDRs.
9. Precipitation and drainage control facilities installed for the protection of WMUs shall be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff in the event of a 100 year, 24-hour precipitation event.
10. WMUs and containment structures shall be designed and constructed to limit ponding, infiltration, inundation, erosion, slope, failure, washout, and overtopping which could be caused by a 100 year, 24-hour precipitation event.
11. Collection and holding facilities associated with precipitation and drainage control systems shall managed to maintain the design capacity of the system.
12. Surface drainage from outside the Facility shall be diverted from the Facility.

13. Discharges to the Facility or units shall be discontinued in the event of any failure which causes a threat to water quality or violation of these WDRs.
14. The Facility shall be designed to withstand the maximum credible earthquake that would be expected to occur in the vicinity of the site, without damage to the foundation or to the structures which control leakage, surface drainage or erosion.
15. The Facility shall be designed and constructed to prevent migration of wastes from the Facility to ground water, or surface water, during disposal operations, closure, and the post-closure maintenance period.
16. Containment structures shall be designed by, and construction shall be supervised and certified by, a Civil Engineer or a Certified Engineering Geologist registered in the State of California.
17. Signs must be posted at the Facility that warn the public of the presence of waste.
18. Access to the Facility shall be controlled to effectively exclude the public.

## II. PROVISIONS

### A. Standard Provisions

The Discharger shall comply with the "Standard Provisions for Waste Discharge Requirements," dated September 1, 1994 (Attachment "B"), which is made part of this Order.

### B. Monitoring and Reporting

1. Pursuant to Section 13267(b) of the California Water Code, the Discharger shall comply with Monitoring and Reporting Program No. R6V-2004-XX as specified by the Executive Officer.
2. The Discharger shall comply with the "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is attached to and made part of the Monitoring and Reporting Program.

### C. Closure and Post-Closure

The Preliminary Closure and Post-Closure Maintenance Plan (CPCMP), shall be updated when there is a substantial change in operations. A final CPCMP shall be submitted at least 180 days prior to beginning any partial or final closure activities or at least 120 days prior to discontinuing the use of the site for waste treatment, storage or



disposal, whichever is greater. The final CPCMP shall be prepared by or under the supervision of either a Civil Engineer or a Certified Engineering Geologist registered in the State of California.

D. Financial Assurance

The Discharger shall submit a report annually providing evidence that adequate financial assurance pursuant to the requirements of the WDRs has been provided for closure, post-closure, and for potential releases. Evidence shall include the total amount of money available in the fund developed by the Discharger. In addition, the Discharger shall either provide evidence that the amount of financial assurance is still adequate or revise the amount of financial assurance by the appropriate amount. An increase may be necessary due to inflation, a change in regulatory requirements, a change in the approved closure plan, or other unforeseen events.

E. Modifications to the Waste Management Unit

If the Discharger intends to expand the capacity of the WMU, a report shall be filed no later than 90 days after the total quantity of waste discharged at this site equals 75 percent of the reported capacity of the site. The report shall contain a detailed plan for site expansion. This plan shall include, but is not limited to a time schedule for studies design, and other steps needed to provide additional capacity. If site expansion is not undertaken prior to the site reaching the reported capacity, the total quantity discharged shall be limited to the reported capacity.

F. Board Order Transfer

In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the authorized Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this Regional Board.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer with a Board Order Transfer Request Form (Attachment "C"). Failure to submit the request shall be considered discharge without requirements, a violation of the CWC. Transfer shall be approved or disapproved in writing by the Executive Officer.

G. Rescission of Waste Discharge Requirements

Board Order No. R6V-2003-0024 is hereby rescinded on the effective date of this Order.

IMC CHEMICALS, INC.  
ARGUS BOILER ASH LANDFILL  
San Bernardino County

- 10 -

BOARD ORDER NO. R6V-2004-0008  
WDID NO. 6B360210001

I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Lahontan Region, on March 10, 2004.

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HAROLD J. SINGER  
EXECUTIVE OFFICER

Attachments: A. Location Map  
B. Standard Provisions for WDRs  
C. Board Order Transfer Request Form

JSS/cgT: Arugus Boiler Ash LFL WDR Revised

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION**

**MONITORING AND REPORTING PROGRAM NO. R6V-2004-0008  
WDID NO. 6B360210001**

FOR

**IMC CHEMICALS, INC.,  
ARGUS BOILER ASH LANDFILLS 1 and 2**

San Bernardino County

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I. MONITORING

A. Disposal Monitoring

The following information shall be recorded as specified below:

1. The monthly and cumulative tonnage of the ash and slag discharged to the authorized disposal sites. The name and location of any off-site legal facility used for discharge of ash waste and furnace slag shall be included in the monitoring report.
2. The source and type of the coal used in the Argus boiler each quarter.
3. The quarterly and cumulative disposal capacity used, the total capacity remaining, and the percentage of total capacity used, each quarter, in cubic yards.
4. Source of any water used in mixing.

B. Waste Monitoring

The Discharger shall report to the Regional Board 30 days prior to a change in the solid fuel source that could significantly affect the heavy metal content of the solid waste.

Representative grab samples of the waste stream shall be collected throughout each year and composited. The composite samples of waste shall be tested at 12-month intervals in accordance with Section 66261.10, Article II (Criteria for Identification of Hazardous and Extremely Hazardous Wastes), Chapter 11, Title 22, California Code of Regulations, to determine the total constituent concentration in milligrams per kilogram (mg/kg) and the extractable constituent content in milligrams per liter (mg/L), for the following constituents:

Parameters

Antimony	Lead
Arsenic	Mercury
Barium	Molybdenum
Beryllium	Nickel
Cadmium	Selenium
Chromium (VI)	Silver
Chromium (total)	Thallium
Cobalt	Vanadium
Copper	Zinc

C. Site Monitoring

Landfills 1 and 2 and any staging areas shall be inspected monthly to check the integrity of the solidified ash cells. Should the inspection indicate that an unauthorized discharge has occurred, the Regional Board shall be notified immediately; written notification shall follow within seven days, and shall include a corrective action plan and schedule for implementation. Observation of the monthly inspections shall be recorded in a field logbook that shall be available to Regional Board staff upon request.

D. Sampling Program

An unsaturated zone monitoring and sampling program shall be implemented to determine the water quality of soil-pore liquids. Locations of lysimeter sampling points for Landfill 1 (BG-1, VZ-1, VZ-2, and VZ-3) are shown in Attachment 1. Locations of lysimeter sampling points for Landfill 2 (BG-2, VZ-4, VZ-5, and VZ-6) are shown in Attachment 2. The unsaturated zone samples shall be analyzed in accordance with the methods specified below to determine the magnitude of the following parameters:

<u>Parameter</u>	<u>Units</u>	<u>EPA Method</u>	<u>Frequencies</u>
Total Dissolved Solids	mg/l	EPA 160.1	Semi-annual
Arsenic	µg/L	EPA 7060	Semi-annual
Boron	µg/L	EPA 200.7	Semi-annual
Fluoride	µg/L	EPA 340.2	Semi-annual
Iron	µg/L	EPA 200.7	Semi-annual
Nickel	µg/L	EPA 6010	Semi-annual
Molybdenum	µg/L	EPA 6010	Semi-annual
Beryllium	µg/L	EPA 6010	Semi-annual
Selenium	µg/L	EPA 7740	Semi-annual
Vanadium	µg/L	EPA 6010	Semi-annual
Chloride	mg/L	EPA 4500	Semi-annual
Sodium	mg/L	EPA 200.7	Semi-annual
Sulfate	mg/L	EPA 4500	Semi-annual
Alkalinity as CO <sub>3</sub>	mg/L	EPA 2320	Semi-annual
pH	pH units	EPA 9040	Semi-annual

E. Statistical Analysis

The Discharger shall conduct soil-pore liquid quality sampling and analysis. Based on background soil-pore liquid quality, the Discharger shall perform a statistical analysis, each monitoring period (after eight independent samples are collected), in accordance with the procedures specified in Section 20415, Chapter 15, Division 2, Title 27, California Code of Regulations to compare background water quality against water quality in areas potentially affected by the discharge.

F. Financial Assurance

The Discharger shall annually submit evidence that adequate financial assurance as described in the WDRs has been provided. Evidence may include a copy of the renewed financial instrument or a copy of the receipt for payment of the financial instrument. In addition, the discharger shall either provide information that the amount of financial assurance is adequate or revise the amount of financial assurance by the appropriate amount.

G. Operation and Maintenance

A brief summary of any operational problems and maintenance activities affecting the Facility shall be submitted to the Regional Board with each monitoring report.

This summary shall discuss:

1. Any significant modifications to the Facility;
2. Any maintenance conducted on the Facility; and
3. Any major problems occurring in the Facility.

II. REPORTING

- A. The Discharger shall comply with "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is attached to and made a part of this Monitoring and Reporting Program.
- B. Semi-annual monitoring reports and unsaturated zone monitoring results shall be submitted to the Regional Board by the 30th day of the month following each semi-annual monitoring period. The reports will be due to the Regional Board on **January 30<sup>th</sup>** and **July 30<sup>th</sup>** each year.
- C. By **January 30** of every year, the Discharger shall submit an annual financial assurance report to the Regional Board. This report shall summarize the amount of money available to ensure the closure and subsequent post-closure maintenance of the Facility in a manner that will not pose an adverse threat to water quality of beneficial uses of

water. This report shall demonstrate that the amount of financial assurance is adequate, or revise the amount provided in recognition that the amount of financial assurance may need to be increased based on inflation or other factors.

- D. The Discharger shall make a compliance statement in each submitted monitoring report, noting each violation that occurred during the reporting period and actions taken and/or proposed to return to compliance, and a schedule for completion. If no violation occurred during the monitoring period, the Discharger shall provide a certification to that effect.

Ordered by: \_\_\_\_\_

HAROLD J. SINGER  
EXECUTIVE OFFICER

Dated: \_\_\_\_\_

- Attachments: 1. Landfill 1 Monitoring Locations  
2. Landfill 2 Monitoring Locations  
3. General Provisions for Monitoring and Reporting