

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

**BOARD ORDER NO. R6V-2003-024
WDID NO. 6B360210001**

**WASTE DISCHARGE REQUIREMENTS
FOR**

**IMC CHEMICALS, INC.,
ARGUS BOILER ASH LANDFILL**

San Bernardino County

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

1. Discharger

On October 29, 2002, IMC Chemicals, Inc. (IMCC), submitted the necessary information to constitute a complete Report of Waste Discharge (RWD) for the Argus boiler ash and furnace slag discharges. For the purposes of this Regional Board Order (Order), IMCC is referred to as the "Discharger."

2. Facility

For the purposes of this Order, the Argus Boiler Ash Landfill is referred to as the "Facility." The Facility is an existing landfill that receives boiler ash from the Discharger's cogeneration plant. The Discharger operates two solid fuel (coal) boilers at an electrical power and process steam cogeneration plant in Trona near the west side of Searles Dry Lake. Additionally, the Discharger generates furnace slag (pyro slag – anhydrous sodium tetraborate slag) during its manufacture of anhydrous sodium tetraborate. The Discharger currently discharges its boiler ash waste to the Facility and proposes to discharge the furnace slag to the Facility.

3. Order History

On January 30, 1992, a waiver of Waste Discharge Requirements (WDRs) for boiler ash discharge from the Argus plant boiler to the Facility was issued. The Executive Officer extended the waiver of WDRs for the Facility on February 3, 1997.

4. Reason for Action

The Waiver of WDRs for the Facility expired in 2002. The Regional Board is adopting WDRs prescribing requirements for the discharge.

5. Facility Location

The Facility 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, R43 E, MDB&M as shown on Attachment "A" which is made a part of this Order.

6. Description of Facility and Discharge

The Facility covers approximately 42.4 acres and is an unclassified unlined waste management unit (WMU).

The Discharger burns coal at two solid fuel boilers to generate electricity and provide steam. As part of the combustion process, the Facility generates a non-hazardous inert ash waste stream. The ash waste stream consists of a combination of boiler fly ash, bottom ash and pyrites. Boiler fly ash is the small particle ash collected in the 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. Under the Conditional Use Permit (CUP) issued by San Bernardino County, IMCC is permitted to place up to 250 tons per day of inert waste at the Facility. Currently, IMCC places approximately 95 tons per day at the Facility.

The Discharger operates calciners and furnaces to produce anhydrous sodium tetraborate. The refined borax is fed through the 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. A small amount of 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.

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 the disposal site in trucks. The ash is discharged to unlined cells constructed at the landfill.

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 unlined WMU is the authorized disposal site for the ash waste stream, as described in Finding No. 6. This site 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 the site is 1.2 million cubic yards, with an average annual proposed usage of 70,000 cubic yards. The remaining capacity of the landfill is approximately 0.5 million cubic yards for solid waste disposal. The site is developed in phases; wherein cells of layered, solidified ash will be built up to a height of approximately 20 feet above natural grade.

9. Waste Designation

The waste ash discharged to the WMU 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 do not need to be discharged at classified units.

This Order allows inclusion of non-hazardous furnace slag into the waste stream that may be discharged into the WMU. The Discharger has provided information in the RWD, that the addition of the furnace slag as described in the RWD into the ash waste stream at the Facility will not have an adverse affect on the beneficial use of ground water nor will it 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 WMU 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 WMU;

- b. the matrix potential of the ash is high in comparison to the underlying native silt, sand, and gravel. This contrast in matrix potential limits the potential for downward migration of liquids under unsaturated flow conditions;
- c. depth to the upper-most aquifer beneath the unlined WMU is approximately 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 exist at the Argus Boiler Ash Landfill as used in the study. The apparent limited vertical migration of Constituents of Concerns (COC) associated with the disposal of the fixated ash and the significant vadose zone thickness provides a conservative protection against migration of COC to ground water from the unlined landfill.

11. Site Geology

The WMU is located in a closed structural basin on the mid portion of an alluvial fan which has been deposited by a large canyon emanating from the Argus Range west of the Facility and non-marine evaporites. 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 landfill site. The average annual precipitation in the vicinity of the WMU is about four inches. The ground water in the vicinity of the WMU 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 Basin Plan which became effective on March 11, 1995 and this Order implements the Basin Plan, as amended.

15. Beneficial Uses - Ground Water

The beneficial use of the ground waters of Searles Valley (DWR 6.52, listed in the Basin Plan, Table 2-2) 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 the Facility 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.

17. Financial Assurance

The Discharger has provided documentation that financial assurance has been developed for closure and subsequent maintenance of the project site. 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 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 be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system.
12. Surface drainage from outside the WMU shall be diverted from the WMU.
13. Discharges to the WMU 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 WMU 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 WMU shall be designed and constructed to prevent migration of wastes from the WMU 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 Registered Civil Engineer or a Certified Engineering Geologist.
17. Signs must be posted which warn the public of the presence of waste.
18. Access to the disposal site 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-2003-024 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, and a report shall be submitted annually indicating conformance with existing 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. The updating of the CPCMP may be prepared by or under the supervision of the owner or operator of the waste disposal site.

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.

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 June 11, 2003.

HAROLD J. SINGER
EXECUTIVE OFFICER

Attachments: A. Location Map
B. Standard Provisions for WDRs

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

**MONITORING AND REPORTING PROGRAM NO. R6V-2003-024
WDID NO. 6B360210001**

FOR

**IMC CHEMICALS, INC.,
ARGUS BOILER ASH LANDFILL**

San Bernardino County

I. MONITORING

A. Disposal Monitoring

The following shall be recorded and the information submitted twice per year for the following:

1. The monthly and cumulative volumes, in tons, of the ash waste stream discharged to either the authorized ash disposal site, marketed for beneficial use, or disposed of at approved off-site disposal site. 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 (cubic yards), the total capacity remaining, and the percent of total capacity used, each quarter.
4. Source and nature of any water used in mixing.

B. Waste Monitoring

Combined grab samples of the ash waste stream shall be collected and reported yearly in January. The Discharger shall report to the Regional Board 30 days prior to a change (e.g., change is the solid fuel source) that could significantly affect the heavy metal content of the solid waste.

The samples of waste shall be tested 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 mg/kg and the extractable constituent content in 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

The landfill and staging area shall be inspected monthly to check the integrity of the solidified ash cells. Should the inspection indicate that an unauthorized discharge has occurred, or may occur, the Regional Board shall be notified immediately; written notification shall follow. Observation of the monthly inspections shall be recorded in a field logbook, which shall be available to Regional Board staff upon request.

D. Sampling Program

An unsaturated zone monitoring and sampling program shall be implemented. The unsaturated zone monitoring program should be capable of analyzing samples 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 ₃	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 2550.7, Chapter 15, Division 3, Title 23, California Code of Regulations.

F. Financial Assurance

In the first monitoring report of each Calendar year the Discharger shall submit evidence that adequate financial assurance as described in the WDRs has been obtained. 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 evidence that the amount of financial assurance is still 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 effluent discharges shall be submitted to the Regional Board with each monitoring report.

This summary shall discuss:

1. Any significant modifications or additions to the disposal facility;
2. Any major maintenance conducted on the disposal facility; and
3. Any major problems occurring in the disposal facility.

II. REPORTING

A. By **August 15, 2003**, submit a workplan to implement the unsaturated zone monitoring.

B. The Discharger shall comply with "General Provisions for Monitoring and Reporting (GPMR)," dated September 1, 1994, which is attached to and made part of this Monitoring and Reporting Program. According to General Provision 1.d of the GPMR, the Discharger shall submit a Sampling and Analysis Plan (SAP) to the Regional Board for approval by **September 5, 2003**. The SAP shall specify disposal monitoring, waste monitoring, unsaturated zone monitoring, sample collection, preservation, shipment and chain of custody protocol, analytical and field sampling procedures, laboratory quality assurance/quality control and data quality. An updated SAP shall be submitted whenever changes to the program are implemented.

- C. Semi-annual monitoring reports and unsaturated zone monitoring shall be submitted to the Regional Board by the 30th day of the month following each semester. The reports will be due to the Regional Board on **January 30th** and **July 30th** each year.

- D. On or before **January 30, 2004**, and before **January 30** every year thereafter, 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 maintenance of the project site in a manner that will not pose an adverse threat to the environment. This report should also provide a demonstration that the amount of financial assurance is adequate, or revise the amount provided. The amount of financial assurance may need to be increased based on inflation or other factors.

- E. In accordance with General Provisions 3.a., 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 into compliance.

Ordered by: _____
HAROLD J. SINGER
EXECUTIVE OFFICER

Dated: **June 11, 2003**

Attachment: A. General Provisions for Monitoring and Reporting