



DUNDALK MARINE TERMINAL

ENVIRONMENTAL UPDATE
CHROME ORE PROCESSING RESIDUE

September 2012

Highlights of the Final Remedy

- ➔ Human health and the environment are protected from the effects of COPR at the Dundalk Marine Terminal
- ➔ Long-term safety ensured with a permanent remedy
- ➔ Designed to prevent hexavalent chromium discharge
- ➔ Economic impact to Port and workers minimized during the implementation of the remedy
- ➔ Enhancement of existing monitoring programs for groundwater and storm water to ensure the effectiveness of the remedy

Port of Baltimore

Vital to the economy of Baltimore, State of Maryland, and the region

The Port of Baltimore is one of the largest and busiest ports in the United States. Port activity creates about 14,630 direct jobs in the region and an additional 25,410 induced and indirect jobs in the state of Maryland. This generates approximately \$3.0 billion in wages and \$1.7 billion in business revenue each year. In 2011, the Port ranked as the 12th largest port in the United States, handling 37.8 billion tons of foreign cargo valued at more than \$51.4 billion. There are over 108,000 jobs in Maryland that are related to the Port.

The Port is first in the nation in handling automobiles, roll-on/roll-off equipment, and importing, sugar, gypsum, iron ore and forest products. The MPA manages seven marine terminals in the Port of Baltimore. The largest of these terminals is Dundalk, which anchors the MPA's roll-on/roll-off cargo business, including automobiles and machinery, and it also handles forest products and containers.

For more information about the Port of Baltimore, visit us on the web at: www.marylandports.com.



State environment authorities' final remedy for Dundalk Marine Terminal ensures protection of health and environment as well as vitality of important economic engine



Aerial photo of Dundalk Marine Terminal

On July 19, 2012, the Maryland Department of the Environment (MDE), held a public meeting to announce the selection of the final remedy to address Chrome Ore Processing Residue (COPR) at the Dundalk Marine Terminal. The remedy selected by MDE, Enhanced Isolation

and Containment, ensures the isolation of COPR from the environment, the protection of health and safety, and the continuation of Port operations during implementation of the remedy. Criteria used by the agency in reaching its determination included protecting health, the environment, and the community over the short and long term and considering the degree to which a remedy would interfere with ongoing Port operations.

Rigorous review and analysis; extensive investigations and studies; opportunities for public comment

The MDE selected the final remedy after a rigorous review of the Corrective Measures Alternatives Analysis (CMAA) submitted by the Maryland Port Administration (MPA) and Honeywell on January 17, 2011. The CMAA describes five alternatives to address COPR at the Terminal, ranging from No Action to Full Excavation. In addition to evaluating the remedies against eight criteria, the agency also reviewed the results of historic and recent investigations of soil, air, groundwater, storm water, surface water, and sediments mandated by a 2006 Consent Decree that was filed in federal court.

Data from the extensive, ongoing, air-monitoring program, implemented by the Port and Honeywell, demonstrate that COPR is not being transported through the air. The investigations also showed that hexavalent chromium has not been found in river sediments. The only significant current movement of hexavalent chromium is from groundwater to storm drains.

On February 3, 2011, MDE held a Public Meeting to present the CMAA to the public. MDE also held a public comment period. The agency considered input from the meeting and comments received during the public comment period.

MPA and Honeywell have formed a Dundalk CMAA Community Working Group to keep the community informed about the progress at the Terminal.

Final Remedy: Enhanced Isolation and Containment

MDE selected Enhanced Isolation and Containment (Alternative 3 of the CMAA) as the final remedy, with special conditions. This remedy will ensure the asphalt surface cover and groundwater monitoring system are continued and enhanced by preventing contaminated groundwater from entering storm drains. This will be accomplished by repairing (and/or) relining substantial portions of the 12th - 15th Street storm drains. The remedy also requires the long-term inspection and maintenance of the asphalt cover, where there is COPR. The surface cover prevents the release of COPR and ensures the long-term protection of health and the environment.



Metal plates inside of storm drain prior to relining activities; over two miles of storm drains have been relined to date

Honeywell



Components of the remedy:

- Repair and reline storm drains located in COPR to mitigate impacts to storm water;
- Install storm line vaults to monitor storm water and facilitate inspections and repairs;
- Prepare a comprehensive groundwater monitoring plan, install additional monitoring wells, and conduct quarterly groundwater sampling for a minimum of 3 years;
- Implement a Performance Management Program (PMP) for storm water, groundwater, blacktop surfaces, and any impacts from COPR movement. The PMP includes:
 - Monitor effectiveness and performance of remedy;
 - Establish triggers to identify need for additional measures;
 - Sample and monitor groundwater and air;
 - Measure expansion of COPR, and;
 - Inspect and maintain the surface cover and storm drains in COPR.
- Maintain data on inspections and maintenance in an electronic database.

Rigorous measures will continue to be implemented under MDE supervision to protect health and environment

MPA and Honeywell have conducted over 5,600 soil, water, sediment, and air tests at the Terminal and spent \$85 million to investigate, quantify, and take steps to address and remediate the effects of COPR at the Terminal. Results of investigations and work that will continue:

- COPR is contained beneath a surface cover of asphalt or concrete and clean fill within a well-defined 148-acre area at the Port, which prevents direct exposure to Port employees and keeps daily operations safe. Inspections and repairs maintain the integrity of the surface cover. Approximately 20 acres of asphalt have been resurfaced.
- Groundwater is affected only in the areas where there is COPR fill. Thirty-eight on-site monitoring wells have shown that concentrations of hexavalent chromium at the perimeter of the Port are well below levels considered safe by MDE. Groundwater is not a source of drinking water at the Port or in the local community.
- Investigations show that the only significant movement of hexavalent chromium is from groundwater into storm drains, and from storm drains to the Patapsco River. Hexavalent chromium has not been detected, however, at significant levels in the river because it naturally changes to a non-hazardous form (trivalent chromium) when it reaches the water. To date over two miles of storm drains have been replaced or relined. These measures are designed to effectively mitigate discharge of hexavalent chromium to the river.
- Since 2006, the Groundwater Treatment Plant has treated an average of 42 million gallons of groundwater per year prior to discharge to the Patapsco River. Approximately 6,600 lbs of hexavalent chromium has been removed to meet MDE water quality requirements.

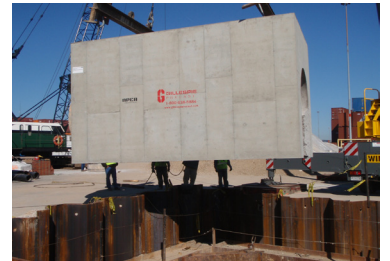
Important monitoring in place to protect health and the environment

MPA has a Health and Safety Plan (HASP) that includes a wide range of health and safety requirements to protect Port workers and contractors. Under the HASP, MPA has collected several hundred air samples for dust and hexavalent chromium in and around work zones. Sample results are well below levels set by



Constructing trench for storm drain repair

Installation of the 13th Street storm drain vault



OSHA. MPA also has implemented a Site Drinking Water Plan, performs routine sampling of its water distribution system, and maintains strict controls for any activity that penetrates the asphalt, which could result in encountering COPR.

MDE process for implementation of remedy

On August 2, 2012, MPA and Honeywell received a letter from MDE identifying the selected remedy for the Dundalk Marine Terminal. MPA and Honeywell will submit an implementation schedule for the final remedy and a conceptual long-term groundwater monitoring plan to MDE by October 31, 2012. MPA and Honeywell will continue to maintain current (protective) measures, perform on-going monitoring and maintenance projects such as groundwater and storm water sampling and surface cover maintenance, and complete storm drain repairs.

History: COPR fill common practice prior to 1970s

From the early 1900s until the 1970s, a portion of the Terminal was constructed using COPR as fill along the Patapsco River to create new land. The COPR came from a chrome manufacturing plant in downtown Baltimore that was started by Mutual Chemical Company, a predecessor to Honeywell. At the time, similar fill operations were a common and legal practice in Maryland and elsewhere. Because COPR contains hexavalent chromium, a hazardous material, it must be addressed under current environmental and safety laws.

Community Working Group

The Dundalk CMAA Community Working Group will include citizen leaders from communities adjacent to/or near the Terminal. The members of the Working Group will represent their communities and keep them informed about progress of the remediation. The first meeting will be held on **September 25, 2012**.

For more information, call (410) 869-2811.



Monitor measures air at work zones and perimeter of Terminal