Dundalk Marine Terminal Remediation
Community Participation Working Group Presentation

September 25, 2012
MPA/MDE/Honeywell Agreement

Consent Decree – April 2006

- Established process for investigation and remedy evaluation
- Required series of Technical Reports that form basis of remedial alternatives development
- Identified criteria for evaluating remedial alternatives
  - Health, Safety, and Protectiveness
  - Federal and state environmental laws
  - Overall effectiveness
  - Degree to which remedy will interfere with ongoing Port operations
- Sets schedule up to submittal of remedial alternatives – Corrective Measures Alternative Analysis (CMAA)
- Consent Decree filed in federal court after reviews and approval by MDE

Cost paid by Honeywell and MPA
Investigation and Remedy Selection Process

1. Extensive Investigations of Soil, Air, Groundwater, Storm water and River
   - Reports Accepted by MDE on November 30, 2010
   - Interim Remedial Measures On-Going

2. CMAA
   - Identify MD and Federal Requirements
   - Establish Cleanup Objectives
   - Review Applicable Technologies
   - Develop List of Remedial Alternatives
   - CMAA Submitted on January 17, 2011; MDE Holds First Public Meeting on February 3, 2011

3. MDE Detailed Review
   - July 19, 2012 Public Meeting

4. Based on Technical and Public Record, MDE Selects Final Remedy on August 2, 2012
   - Design the Cleanup
   - Implement the Cleanup
Site Investigation Findings

- COPR is contained within a well-defined area where it is covered with a clean soil layer and asphalt pavement cap

- Drinking water sources fully protected; groundwater is not a source of drinking water at Terminal or in local communities

- Hexavalent chromium not found in river sediments or surface water above federal criteria

- Human Health/Ecological Risk Assessments approved by MDE

- Accelerated interim measures significantly reduce amount of hexavalent chromium getting into storm drains

Data shows that COPR has not migrated by air or groundwater from the Terminal
Consent Decree Remedy Evaluation Criteria

- Protect health and environment from chromium ore processing residue (COPR) at Port
- Meet all federal and state environmental laws
- Reduce toxicity, mobility or volume of contamination
- Ensure long-term protectiveness and permanence
- Consider short-term risks associated with implementation
- Consider degree to which a remedy will interfere with ongoing Port operations
- Be cost effective
- Ability to implement

MDE applied rigorous criteria to select remedy
MDE Remedy – Enhanced Isolation and Containment with special conditions

- Repair and reline storm drains located in COPR to mitigate impacts to storm water
- Install vaults to monitor storm water and facilitate inspections and repairs
- Implement Performance Management program for storm water, groundwater, surface cover, and any impacts from COPR heaving including:
  - Monitoring effectiveness and performance of remedy
  - Establishing triggers to identify need for additional measures
  - Routine reporting on effectiveness of remedy
  - Maintaining containment of COPR at the Terminal
- Maintain data on inspections and maintenance in an electronic database
- Continue protective monitoring and maintenance projects
- Install additional monitoring wells and conduct quarterly groundwater sampling for a minimum of three years

Remedy prevents storm water contamination
BENEFITS of Enhanced Isolation and Containment

- Groundwater monitoring to track continued effectiveness of remedy
- Protects health and environment
- Manageable disruption to Port operations
- Prevents contamination of storm water prior to discharge to river
- Avoids disruption to Port and community that would occur with more aggressive remedy
- Modifications can be made based on performance data

Remedy is protective of health and environment
Interim Remedies Achieving Results

- Groundwater Treatment Plant has treated an average of \textit{42 million gallons of storm water/year} since 2006 from 14\textsuperscript{th} and 15\textsuperscript{th} Street storm drains; resulting water quality meets MDE requirements.

- Since 2006 almost \textit{two miles of storm drains have been relined} to prevent chromium from entering drains; advanced relining technologies being used; installation of vaults at storm drains located in COPR fill; significant reduction of chromium moving into storm drains.

- \textit{20 acres of new blacktop cap since 2005 strengthens COPR containment.}

- Extensive testing of advanced technologies underway.

\textbf{Accelerated program for interim remedies under MDE supervision.}
On-Going Monitoring Programs

Air Monitoring Program
• Monitoring of air at perimeter of Terminal since 2007; no detections of hexavalent chromium from COPR in perimeter air monitors

Groundwater Monitoring Program
• Groundwater is monitored on semi-annual basis in 34 wells located at perimeter of COPR fill area; results confirm that hexavalent chromium is not leaving site boundary in groundwater at unacceptable levels

Storm water Monitoring Program
• Storm water is monitored quarterly from 12 storm drain outfalls and outfall from treatment plant; final remedy addresses storm water

Drinking Water Monitoring Program
• Drinking water is routinely monitored; no detections of hexavalent chromium in drinking water at Terminal
Storm Drain Repair

Clean and Identify Repair Areas

Repair Damaged Areas

Liner Preparation

Spray-on Surface Coating

Liner Installed

Grouting Seals Plates
Impact of Storm Drain Relining

Before

Existing Storm Drain

After

Repaired Storm Drain

Relining prevents hexavalent chromium movement