

## Region 3 GPRA Baseline RCRA Corrective Action Facility

# Honeywell International Inc. (Formerly: Honeywell Baltimore Works, Allied Signal)

Block & Wills Streets  
Baltimore, Maryland 21231  
Congressional District 3  
EPA ID #: MDD069396711  
Last Updated: 12/19/2008

## Current Progress at the Site

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On September 29, 1989, EPA and the State of Maryland Department of the Environment (MDE) entered into a Consent Decree with Allied-Signal Inc. for further investigation and remediation of the Allied-Signal Inc. Baltimore Works Site ("Site"). The company known as AlliedSignal changed its name to Honeywell in 2000.

The Consent Decree anticipated that the final remedy would include onsite containment of contaminated soil and groundwater through construction of a deep vertical hydraulic barrier and a multi-media cap ("containment structure"). The Consent Decree specified that the remedy attain two performance standards - a surface water performance standard and a groundwater gradient performance standard. The surface water performance standard requires that the concentration of total dissolved chromium in the surface water be reduced to 50 parts per billion ("ppb") for each surface water sample location by arithmetically averaging the samples taken at three depths (top, middle and bottom). The groundwater gradient performance standard requires that the groundwater level inside the containment structure be 0.01 foot lower than the water level outside of the containment structure based upon hourly measurements averaged over a 30-day period. In 1992, remedies were selected for four areas at and around the Baltimore Works Site (the Former Manufacturing Area, the Southeast Quadrant, a Newly Acquired Contiguous Property, and Wills Street by Dock Street). Honeywell remains perpetually responsible for maintaining the containment structure and monitoring the environment around the property.

### Area 1. Containment Area (Former Manufacturing Area):

Dismantlement - Several large manufacturing buildings were dismantled over a several year period from November 1989 to February 1993. Approximately 50,000 tons of non-hazardous and hazardous waste was removed from the site during dismantlement. Hazardous waste from the dismantlement of the large manufacturing buildings was disposed with a Land Ban Variance at the Hawkins Point Landfill. The remaining tanks, an office building with a laboratory, and a waste water treatment plant were dismantled between 1997 and 1999. Hazardous waste from the later dismantlement was sent to a hazardous waste treatment facility in Pennsylvania.

Embankment - A rock embankment was constructed in 1991 - 1992 around the waterside perimeter of the Site to support old and failing bulkheads. Construction of the embankment required a dredging permit from the Corps of Engineers. Dredged material was disposed at Hart Miller Island. A total of 150,000 cubic yards of sediment was dredged and approximately 250,000 tons of stone was placed during the embankment construction.

Deep Barrier Wall - A slurry wall made up of soil and bentonite and measuring over three feet wide and, in some areas, greater than 75 feet deep was constructed around the entire perimeter of the containment area during a three year period from 1994 through 1996. Following completion of the barrier wall, the level of total dissolved chromium in monthly samples of surface water has been less than 50 ppb and generally less than the amount of chromium that can be detected through chemical analysis (10- 20 ppb).

Water Transfer Station - Construction over the multimedia cap of a two story building housing two 10,000 gallon tanks, several offices, and a meeting room was completed in 1999. The tanks store extracted groundwater before the extracted groundwater is transferred offsite to a treatment facility.

Head Maintenance System - A system designed to control the level of groundwater inside of the containment unit, referred to as the "Head Maintenance System", was constructed from 1996 to 1999. The Head Maintenance System consists of 16 water level monitoring piezometer pairs located along the circumference of the containment structure (12 deep pairs and four shallow pairs - each pair consisting of a one piezometer inside the wall and one piezometer outside the wall), 12 deep and four shallow pumping wells, 13 below ground maintenance vaults, and a computerized control system. The Head Maintenance System is designed to address the Groundwater Gradient Performance Standard requirement established in the Consent Decree. The Groundwater Gradient Performance Standard requires that the water level inside the containment structure be 0.01 feet lower than the water level outside of the containment structure at each piezometer pair based upon hourly measurements averaged over a 30-day period. The Groundwater Gradient Performance Standard has been satisfied continuously since July, 1999.

Multimedia Cap - A RCRA Multimedia cap was constructed over the entire 15 acre containment area and tied into the barrier wall. The cap consists of capillary break stone, a geosynthetic clay liner (GCL), a flexible membrane liner (FML), geocomposite drainage, cover soil, stone, and, in some locations, asphalt. The cap was constructed in sections to accommodate changing space needs. Construction of the cap took place from 1996 to 1999.

Verification Period - Before any development can take place on the portion of the Site surrounded by the Hydraulic Barrier Wall, Honeywell must demonstrate one year of compliance with the performance standards established in the Consent Decree for the concentration of chromium in the surface water and for the inward gradient of the groundwater. The demonstration period is complete.

## **Area 2. Southeast Quadrant :**

Removal of chromium contaminated soil - In the early 1990's, soils containing levels of chromium in concentrations that would create a regulated hazardous waste if they were removed from the site during future activities such as construction (soils with greater than 100 milligrams of chromium per kilogram of soil) were removed from the southeast quadrant.

Shoreline Stabilization - In the mid-1990's, the waterside perimeter of the southeast quadrant was stabilized by constructing a stone revetment and a gabion retaining structure. In lieu of replacing a shallow fish habitat, AlliedSignal contributed funds for the construction of a fish ladder in the upper Patapsco River, as an environmental benefit project at the request of the State of Maryland Department of Natural Resources.

Construction of a Layered Soil Cap - On April 14, 1999, AlliedSignal completed construction of a cap over the entire southeast quadrant. The cap will prevent contact with soils containing chromium and polynuclear aromatic hydrocarbon compounds ("PAHs"). The cap consists of a capillary break layer, geotextile, cover soil/stone, and a surface cover (asphalt).

### **Former Michael Silver Properties (Portion of Area 3):**

Prior to EPA and MDE's approval of the remedy for the Site, Allied-Signal Inc. purchased two properties located across Block Street from each other with one of the properties located across Philpot Street from the southeast quadrant portion of the Site. These properties were formerly owned by Mr. Michael Silver. The remedial decision required Allied-Signal Inc. to clear the properties, remove plants and plant roots, resample the soil, and if the level of PAHs exceeded a predetermined level established in the 1991 Statement of Basis and the 1992 Final Decision and Response to Comments issued by EPA, place two feet of cover soil and erosion control on the properties. Allied-Signal Inc. cleared the properties, resampled the soil, and identified levels of PAHs in the soil greater than the predetermined levels. Honeywell placed cover material over the properties in July 2002.

In April and May of 2003, additional material was added and the property was regraded to support interim use activities such as the presence of Cirque du Soleil in April and May of 2003. Following departure of the circus, impacted corrective measures were identified and repaired and the prospective developers placed additional soil over the area. Since that time, Honeywell learned the two foot minimum cover is reduced and is planning to repair the cover imminently. In addition, the placement of the cover impacted an adjacent historical building. Honeywell is working with the owner to address the concerns.

### **Wills and Dock Street Intersection (Portion of Area 3):**

Chromium source material and soil containing greater than 10 mg/kg of hexavalent chromium has been removed from the intersection of Wills and Dock Street.

### **Contingent Remediation:**

Chromium source material and soils containing greater than 10 mg/kg of hexavalent chromium have been removed from properties in the vicinity of the Site. In March 2003, after a public notice period, EPA and MDE approved Honeywell's request to yield to Maryland Department of Environment's Voluntary Cleanup Program for future cleanups of nearby properties. On October 2, 2003, the Agencies approved the Honeywell's overall Contingent Remediation Workplan.

### **Corrective Measures Implementation Report :**

In March, 2000, Honeywell submitted a report entitled "Construction Completion Report, Phase II: Soil-Bentonite Hydraulic Barrier Wall and Phase III: Final Remedial Construction". The Construction Completion Report was submitted to satisfy the Consent Decree requirement for submittal of a Corrective Measures Implementation Report. The report includes a certification of completion by independent engineers. EPA and MDE substantially approved the report in October, 2001.

A similar report detailing construction of the soil cap over the former Michael Silver properties was submitted by Honeywell following completion of construction of the soil cap in July 2002. EPA and MDE approved the January 2003 Report.

### **Next Steps :**

1. Future environmental monitoring:

Water elevations will be monitored hourly at 16 piezometer pairs to ensure an inward gradient is maintained. The presence of chromium will be evaluated at 18 locations in the surface water and at twelve locations in the groundwater every three months. The presence of a different contaminant in the containment structure, cyanide, is being evaluated at two locations in groundwater every three months. The presence of chromium and cyanide will be evaluated once

a year in storm water drainage from the cap. Sediment monitoring will be performed once every three years for at least ten years and possibly longer. Daily air monitoring for chromium and asbestos will take place during any future disruption of the contaminated soil.

## 2. RCRA Redevelopment

Prior to any development on the property, conceptual and detailed design plans must be approved by EPA and MDE. EPA and MDE will approve the development only if it is found that the development will not interfere with the corrective measures, or the monitoring for the corrective measures, and that increased risks to the health or the environment will not result from the conditions at the site.

In late 2002 and early 2003, EPA, MDE, and the developer, (SBER Harbor Point, LLC and Harbor Point Development, LLC), negotiated an agreement to limit liability for the developer know as the Prospective Lessee Agreement. After a public notice period, the Prospective Lessee Agreement became effective on May 5, 2003. After the agreement was effective the developer entered into a long-term ground lease for the property with Honeywell.

Current re-development plans for the property call for a signature waterfront public building, two office buildings, an apartment and condominium building, retail stores, restaurants, parking, and a waterfront park. Construction on the first office building, started in late Fall of 2007, is scheduled to be open in early 2010. Total buildout of the property is expected to last through 2017.

## **Site Description**

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Located in Baltimore, Maryland, the Site was constructed in the mid-nineteenth century on approximately 18 acres of waterfront property in close proximity to Baltimore's Inner Harbor. Chrome ore was processed at the Site for the production of chromium chemicals until 1985. The Site was purchased by the Allied Chemical Company in 1954. Investigations in the early to mid-1980's found large quantities of chromium migrating from the Site into the Harbor and into the groundwater below the Harbor.

# Baltimore Inner Harbor Site





## Site Responsibility

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RCRA Corrective Action activities at this facility are being conducted under the joint direction of EPA Region III and the State of Maryland Department of the Environment, with occasional oversight assistance from the Corps of Engineers.

## Contaminants

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In 1986, contractors hired by Allied-Signal Inc. calculated that 62 pounds of chromium were being released each day from the planned containment structure. Of the 62 pounds of chromium that were released each day, 50 pounds a day entered the Harbor surface water. The balance of the released chromium (12 pounds per day) entered the groundwater below the Harbor. Approximately 80 percent of the chromium was/is hexavalent chromium, which is a form of chromium that can cause cancer. In 1986, the concentration of total chromium in the harbor water measured up to 2000 parts per billion (“ppb”) and the concentration of hexavalent chromium in the harbor water measured up to 640 ppb. The Consent Decree requires the level of total chromium in the surface water to be reduced below 50 ppb. Since several months following completion of construction of the barrier wall in February, 1996, the level of total dissolved

chromium in samples of surface water has been less than 50 ppb and generally less than the amount of chromium that can be detected through chemical analysis (10-20 ppb).

## **Community Interaction**

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In 1991, EPA and MDE held two public comment periods, conducted community interviews, and held a public meeting to obtain comments on the proposed remedy. Since that time, EPA and MDE have participated in one additional public meeting in response to a request from a community interest group and one public event held by Honeywell to announce construction completion. Progress on the remedy is communicated by Honeywell to interested persons through newsletters and to representatives of interested community groups at meetings. Community concern has primarily focused on the final use and appearance of the property. On December 11, 2002, EPA and MDE issued a public notice announcing revision of the contingent remediation requirements (see "Contingent Remediation", above").

## **Institutional Controls**

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The Consent Decree is the administrative mechanism which calls for monitoring the remedy in perpetuity to ensure that the remedy and any future redevelopment at this site remains protective of human health and the environment.

## **Government Contacts**

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For more information about EPA's corrective action webpage, including Environmental Indicators, please visit our site at: [www.epa.gov/reg3wcmd/correctiveaction.htm](http://www.epa.gov/reg3wcmd/correctiveaction.htm)  
<http://www.epa.gov/reg3wcmd/correctiveaction.htm>

## **Facility Contact**

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