

# Health Study Review Public Meeting

December 17, 2009  
6:30 PM

New Jersey City University  
Jersey City, N.J.

**Chromium Cleanup**  
Partnership

N.J. DEPARTMENT OF ENVIRONMENTAL PROTECTION  
CITY OF JERSEY CITY  
PPG INDUSTRIES  
COURT-APPOINTED SITE ADMINISTRATOR

# Public Meeting Overview

- Meeting Purpose and Objectives
- Settlement Overview/Settlement Health Study Requirement
- Chromium-related Health Effects
- Studies Reviewed and Results
- Criteria for Health Studies
- Other Health Topics
  - Groundwater
  - Air Monitoring Program during Remediation
  - Residential Sampling
- Public Comment/Q&A

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# Settlement Overview

- On June 26, 2009, DEP, Jersey City and PPG signed a settlement in Superior Court where they agreed to work together to clean up PPG's chromium sites.
- The agreement:
  - Establishes a 5-year goal to clean up all 20 sites;
  - Creates new position of an independent, court-appointed Site Administrator;
  - Creates new position of an independent Technical Consultant; and among other things,
  - Directs the Site Administrator to recommend chromium health studies, if necessary

# Settlement Health Exposure Study Requirement

- Review chromium-related health studies concerning health impacts in Hudson County
- Consult with experts in the field
- If necessary, recommend a health exposure study that would monitor the people living within the vicinity of the Garfield Avenue Site

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# Cr(VI)-Related Health Effects

- Respiratory, Nasal, Skin and Kidney effects
- Increased risk of lung cancer
- Depends on dose and exposure route
  - How much and how long
  - How exposed: ingested, inhaled, skin contact
- Most known effects based on epidemiological studies of occupational exposures
  - Workers exposed at much higher levels

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# NJ Health Studies reviewed, to date

- *Medical Evaluation of Children and Adults of the Whitney Young Jr. School* (1989)
- *An Assessment and Quantitative Uncertainty Analysis of the Health Risks to Workers Exposed to Chromium Contaminated Soils* (1991)
- *The Health Hazards Posed By Chromium-Contaminated Soils in residential and Industrial Areas: Conclusions of an Expert Panel* (1991)
- *Airborne Concentrations of Cr(III) and Cr(VI) from Contaminated Soils at Unpaved and partially-Paved Commercial/Industrial Sites* (1992)
- *Chromium exposure assessment of outdoor workers in Hudson County, NJ* (1992)
- *Microenvironmental Analysis of Residential Exposure to Chromium-Laden Wastes in and Around New Jersey Homes* (1992)
- *Residential Exposure to Chromium Waste – Urine Biological Monitoring in Conjunction With Environmental Exposure Monitoring* (1992)
- *Field Validation for Sampling and Analysis of Airborne Hexavalent Chromium* (1993)
- *Designing a biological monitoring program to assess community exposure to chromium: Conclusions of an expert panel* (1993)
- *Chromium Medical Surveillance Project: Final Technical Report* (1994)
- *Urinary Excretion of Chromium Following Ingestion of Chromite-Ore Processing Residues in Humans: Implications for Biomonitoring* (1994)
- *The Effect of Remediation of Chromium Waste Sites on Chromium Levels in Urine of Children Living in the Surrounding Neighborhood* (1995)
- *Increased DNA-Protein Crosslinks in Lymphocytes of Residents Living in Cr-Contaminated Areas* (1995)
- *Monitoring Human Lymphocytic DNA-Protein Cross-links as Biomarkers of Biologically Active Doses of Chromite* (1996)
- *Background Air Concentrations of Cr(VI) in Hudson County, New Jersey: Implications for Setting Health-based Standards for Cr(VI) in Soil* (1997)
- *Exposure to Chromium Dust from Homes in a Chromium Surveillance Project* (1997)
- *Community Exposure and Medical Screening Near Chromium Waste Sites in New Jersey* (1997)
- *The Association of Chromium in Household Dust with Urinary Chromium in Residences Adjacent to Chromate Production Waste Sites* (1998)
- *Reduction in Residential Chromium Following Site Remediation* (2000)
- *Analysis of Lung Cancer Incidence Near Chromium-Contaminated Sites in New Jersey (a/k/a Hudson County Chromium Sites)* (2008)
- *Chromium Exposure and Health Effects in Hudson County: Phase I* (2008)
- *Characterization of Hexavalent Chromium Concentrations in Household Dust in Background Areas* (2009)
- *Derivation of an Ingestion-Based Soil Remediation Criterion for Cr<sup>+6</sup> Based on the NTP Chronic Bioassay Data for Sodium Dichromate Dihydrate* (2009)

# Health Experts Consulted, to date

- **Barbara Beck**, PhD, DABT, FATS - Gradient Corporation and Harvard University
- **Kathy Black, PhD** – Environmental & Occupational Health Sciences Institute
- **Max Costa**, PhD - New York University School of Medicine
- **Jerald Fagliano**, MPH, PhD - NJ Department of Health & Senior Services
- **Michael Gargas**, PhD - formerly of Sapphire Group
- **Michael Gochfeld**, MD, PhD - Environmental & Occupational Health Sciences Institute
- **Sumi Hoshiko**, MPH - California Dept. of Public Health, Environmental Health Investigations Branch
- **Janet Kester**, PhD - NewFields
- **Paul Lioy**, PhD - Environmental and Occupational Health Sciences Institute
- **Eileen Murphy**, PhD - NJDEP, Division of Science, Research & Technology
- **Racquel Stephenson**, MPH - ATSDR Region 2
- **Alan H. Stern**, Dr. PH - NJDEP Office of Science, Research & Technology
- **Joan Strawson**, MS, JD - Toxicology Excellence in Risk Assessment
- **Melvyn Tockman**, MD, PhD – H. Lee Moffitt Cancer Center and Research Institute, University of South Florida
- **Marilyn Underwood**, PhD - California Department of Public Health, Environmental Health Investigations Branch
- **Anatoly Zhitkovitch**, PhD - Brown University, Division of Biology and Medicine

# Health Studies Reviewed

- Studies Specific to New Jersey
  - Health Studies in 1990s
  - Household Dust Studies, 2006-08 (EOHHSI)
  - Lung Cancer Incidence Study, 2008 (DHSS)
- Studies Outside New Jersey
  - Community Studies (published 2001-09; data from 1970s-2000s)
  - Occupational Studies (1980s -2009)

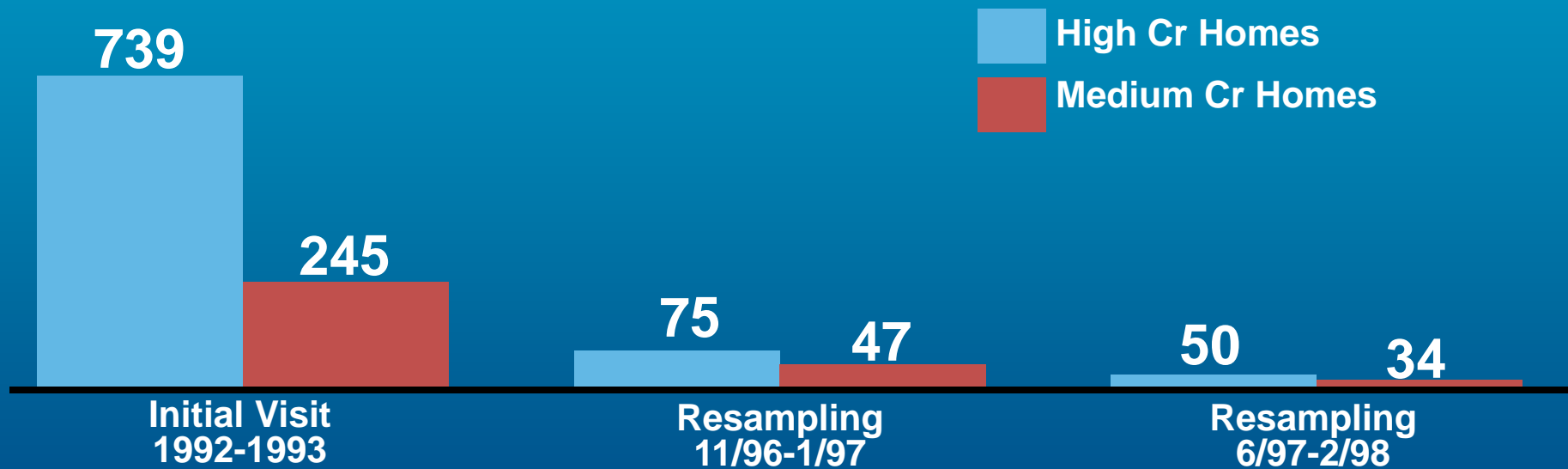
# 1990s Hudson County Studies Summary Results

- Early 1990s studies showed correlation between proximity to CCPW sites and level of total Cr in household dust
- Children in households with elevated Cr in dust had higher Cr in urine
- Follow-ups at homes near CCPW sites that were remediated showed significant decline in total Cr in household dust

# Chromium in House Dust Pre v. Post-remediation

- In 1992-93 study, homes were identified as having had high (> 500 ppm), medium (100-500 ppm) or low (< 100 ppm) total Cr in house dust
- 23 homes re-sampled in 1996-98
- Homes primarily from 3 neighborhoods: Metrofield, Siedler/Madison, Dwight St./Stegman St.
- Previously high and medium-level homes saw approx. 85% decline in Cr concentrations
  - High-level: median declined from 739 ppm to 50 ppm
  - Medium-level: median declined from 245 ppm to 34 ppm

# Reduction in Residential Chromium Following Remediation



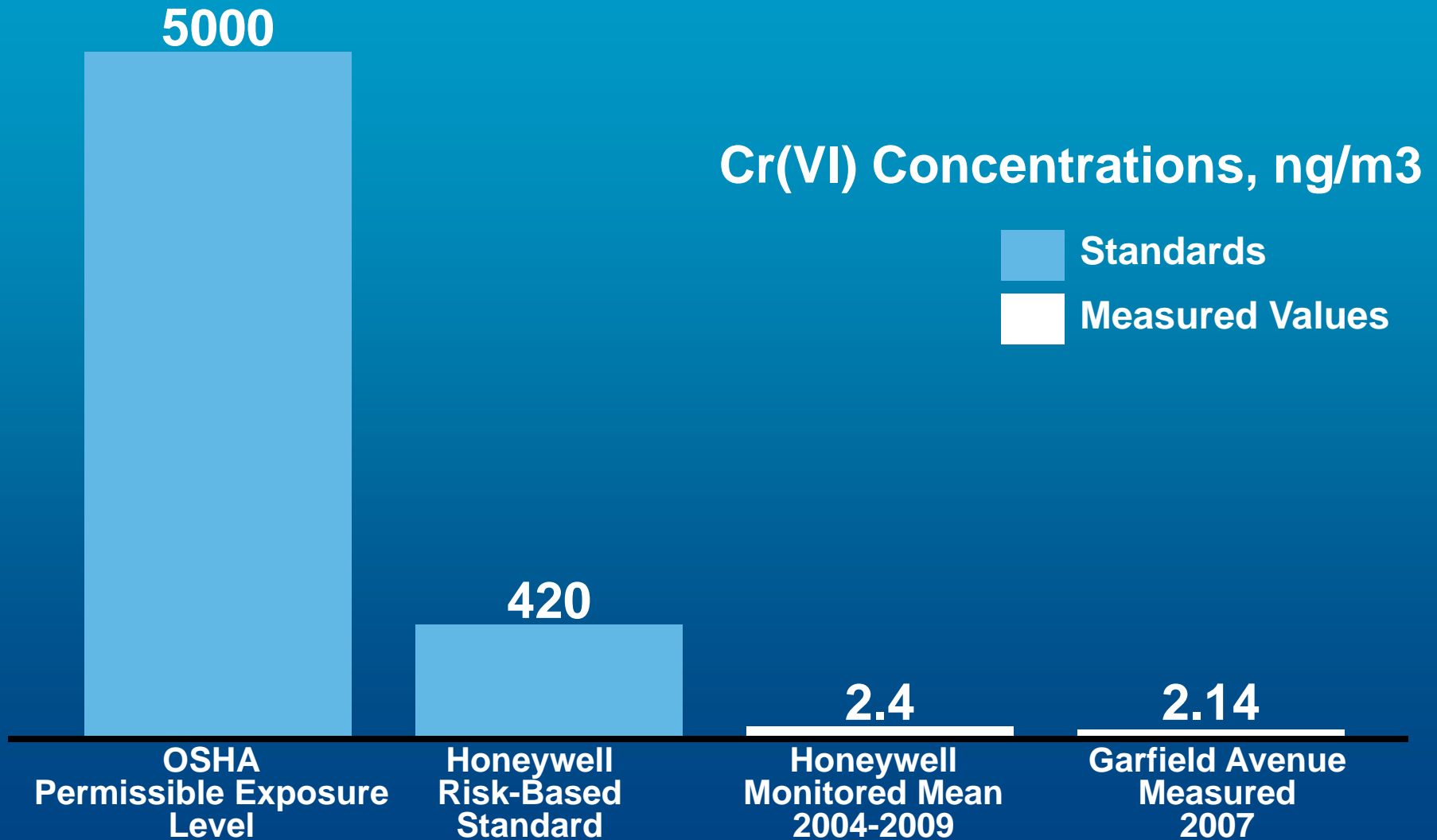
Median Total Cr Concentration  
in Household Dust, ppm

# Jersey City CCPW Sites Status 2009

- 145 Jersey City Sites identified in 1980s
- Since then:
  - 50 sites entirely cleaned up (NFA)
    - Approximately 40% of all Jersey City Chromium Sites have been investigated and cleaned up
    - 46 PPG sites cleaned up
  - 19 investigated and found not contaminated
  - 76 awaiting cleanup, but capped or underground
    - 18 PPG sites now under 5-year Master Schedule cleanup

6 PPG

# Cr(VI) in Air: Standards vs. Measured Values



# Health Studies Presentation

- EOHSI - Cr(VI) in Dust
- DHSS - Lung Cancer

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# Health Study

## ■ Key questions for any community health study are:

1. Will the data gathered to detect a specific contaminant (chromium waste) aid in the prevention of disease or health effect?
2. How will the information be used to:
  1. Protect community health;
  2. Address community concerns; and
  3. Take appropriate action?
3. Are there programs/resources in place to act on findings, if necessary?
4. What follow-up will occur and who is responsible?

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# Drinking Water

- Jersey City does not use groundwater for its drinking water supply
- Clean, uncontaminated drinking water in Jersey City comes from Boonton Reservoir, located in Morris County, and Split Rock Reservoir in Rockaway
- Contaminated groundwater will be treated as part of the cleanup plan, but will not be used as drinking water

# Other Health Topics, continued

- Air Monitoring During Remediation
  - Cleanup will be conducted using proven dust-control practices
  - A combination of permanent and mobile Air Monitoring Stations will continuously check to make sure that safe conditions are maintained during all cleanup activities
  - Work will be halted if conditions require
- Residential Inspection and Sampling
  - Workshop January 21, 2010

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# Public Comment / Q&A

# How to Reach Us

- **Phone:** 201-777-2099
- **E-mail:** [Info@chromecleanup.com](mailto:Info@chromecleanup.com)
- **Mail:** Chromium Cleanup Partnership  
P.O. Box 15981  
Jersey City, N.J. 07305
- **Visit:** Stop by the PPG-operated  
Garfield Avenue Renewal Company office  
at 334 MLK Drive, Jersey City

# Next Public Meeting

- **Topic:** Workshop on residential chrome sampling and cleanup program
- **Date:** January 21
- **Time:** 6:30 p.m.
- **Location:** Bethune Center  
140 Martin Luther King Drive  
Jersey City