# Industrial Hygiene Case Study: Sanitary Contract No. 926 RR, Electrical Distribution System Reliability Improvements, Physical Security Upgrades and On Site Power Generation at the Patapsco Wastewater Treatment Plant

**Project Overview:**

This case study focuses on a large construction site project that began in 2021, and is on-going through 2025, requires a comprehensive approach to industrial hygiene to ensure worker safety and environmental compliance during excavation and construction activities in Chromium contaminated soils and water. The project is being overseen by the Contractor, with support from KES responsible for implementing various monitoring, management, and reporting plans related to dust, soil, water, and health and safety.

**1. Site Specific Health and Safety Plan**

**Objective:** To ensure that all personnel working on-site are protected from hazards related to dust, soil contamination, water, and general construction activities.

- **Action:** A comprehensive Health and Safety Plan was prepared and signed by a Certified Industrial Hygienist (CIH) to ensure proper safety protocols were followed. The plan includes emergency procedures, PPE requirements, and safety training for all personnel.
- **Implementation:** The plan was revised and submitted for Owner approval, with KES responsible for ensuring all necessary revisions were made for full approval. The CIH and Health and Safety Officer reviewed the plan continuously to update it as conditions on the site evolved.
- **Responsibility:** The Health and Safety Officer has ultimate authority over the health and safety of all personnel, with guidance provided to the Site Health and Safety Coordinator.

**2. Dust Monitoring Plan**

**Objective:** To protect workers and nearby communities from potential respiratory hazards caused by airborne dust during excavation and construction activities.

- **Action:** A dust monitoring plan was created, which includes the use of real-time dust monitors during site excavation. These dust monitors continuously track particulate matter (PM) in the air, with data displayed in real time for immediate action.
- **Implementation:** KES was tasked with providing and maintaining the dust monitoring equipment throughout the excavation period. Any exceedances of the predetermined particulate levels trigger specific mitigation measures, such as dust suppression via water spraying.
- **Responsibility:** The Site Health and Safety Coordinator oversees dust monitoring activities, ensuring compliance and mitigating risks as necessary.

**3. Soil Management Plan**

**Objective:** To properly manage, characterize, and dispose of soils encountered during excavation, particularly if contamination is present.

- **Action:** A soil management plan was prepared, which includes pre-characterization of soils and mapping of areas to assess potential contamination. Laboratory results were provided to classify soil types and contamination levels (e.g., heavy metals, PCBs).
- **Implementation:** Pre-characterization of soils was conducted on site, and mapping helped delineate areas requiring special handling or disposal procedures. The subcontractor was responsible for obtaining lab results, developing and implementing waste disposal strategies, which included disposal of hazardous soils and regulated soils.
- **Responsibility:** The Certified Industrial Hygienist (CIH) ensures that all aspects of soil management comply with environmental health standards.

**4. Water Management Plan**

**Objective:** To monitor and manage water on site to prevent contamination and ensure safe handling of water during construction activities.

- **Action:** A water management plan was implemented, which requires ongoing testing of water used on-site and from storage tanks to ensure compliance with environmental regulations. Water characterization testing is performed each time storage tanks reach capacity.
- **Implementation:** KES is responsible for coordinating water management, including collecting samples and sending them to labs for analysis. Results help determine whether treatment or disposal is necessary. KES is responsible for implementing waste disposal strategies, which included disposal of hazardous waters and regulated waters, which were disposed of under permit to the wastewater treatment plant.
- **Responsibility:** The Site Health and Safety Coordinator monitors water management efforts to ensure safe handling practices and reporting to authorities.

**5. On-Site Supervision and Safety Oversight**

**Objective:** To ensure effective oversight of environmental monitoring and health and safety during all construction activities.

- **Action:** The Site Health and Safety Coordinator was appointed to supervise on-site operations, including monitoring employee's exposure to Hexavalent Chrome (CFR 1926.1126), dust, soil, and water management. This role ensures adherence to the Health and Safety Plan and environmental monitoring protocols.
- **Implementation:** The coordinator ensures that all contractors, subcontractors, and site personnel are trained in safety procedures and that PPE is worn as required. The Site Health and Safety Coordinator also suspends work activities if conditions exceed safety thresholds.

- **Responsibility:** The Site Health and Safety Coordinator reports any changes in site conditions to the Health and Safety Officer, who makes decisions regarding necessary modifications to the Health and Safety Plan.

**6. Personnel Provided by KES: Roles and Responsibilities**

- **Certified Industrial Hygienist (CIH):** A CIH in good standing with the American Board of Industrial Hygiene was assigned to ensure that all safety and monitoring plans were properly developed and adhered to, particularly the Health and Safety Plan. This professional also signed off on the site-specific safety plan.
- **Site Health and Safety Coordinator:** This role is pivotal in supervising on-site activities, managing environmental monitoring, and ensuring that all safety protocols are followed. The coordinator is responsible for addressing any identified hazards, implementing corrective actions, and ensuring personnel are trained.

**7. Testing For Employee and Environmental Exposures**

**Objective:** To assess the presence of employee exposures to Hexavalant Chrome and environmental exposures on-site and manage disposal if necessary.

- **Action:** KES performed compliance testing for employee exposures to Hexavalant Chrome and managed the disposal per project specifications, providing detailed lab results and reports.
- **Action:** KES performed compliance testing for soil management, dust management, and water management.
- **Implementation:** Testing results guided the management and disposal process, ensuring compliance with environmental regulations.

**Conclusion:**

The case study highlights a coordinated approach to industrial hygiene, focusing on dust, soil, water, and health and safety management during construction. Proper monitoring, planning, and oversight ensure the safety of personnel and compliance with environmental regulations throughout the project lifecycle. By adhering to the outlined plans and roles, the project minimizes the risk of health hazards while maintaining a safe work environment.