









HEAVY METALS

Heavy metal pollution in soil is commonly found in urban areas and particularly at brownfield sites, due to past industrial activities such as metal fabrication, plating, mining, power generation, and manufacturing. Examples include Copper, cadmium, chromium, lead, arsenic, nickel, mercury, and zinc. They can pose persistent and irreversible soil pollution if not mitigated. Federal rules, such as the Toxic Substances Control Act (TSCA), and state regulations govern the reporting, testing, cleanup, and disposal of these materials.

REMEDIATION STRATEGIES

During remediation, heavy metal-contaminated soil and water can be treated, removed, or contained to prevent further environmental and human exposure. The process is regulated by federal, state, and local standards and is conducted by trained and certified professionals using approved technologies and methods.

A SIMPLIFIED SUMMARY OF THE REMEDIATION PROCESS:

-  **SITE ASSESSMENT**
Gather historic data about the site's historical activities, collect and analyze samples to identify contamination.
-  **RISK EVALUATION**
Evaluate risks to human health and the environment using toxicological and exposure data.
-  **CONTAINMENT MEASURES**
Install physical barriers or "caps" to prevent human exposure and the spread of contamination, especially in groundwater.
-  **TREATMENT TECHNOLOGIES**
Use methods like soil removal and disposal, groundwater pump & treat, chemical additives, soil washing, and electrokinetic remediation.
-  **LONG-TERM MONITORING**
Evaluate contaminant levels to ensure remediation effectiveness and maintain safety.
-  **SITE RESTORATION AND CLOSURE**
Restore the landscape, submit a final report to regulatory bodies, and obtain site closure certification.



Heavy Metals are naturally occurring minerals that may be released from mining, industrial processes, pesticide use and emissions from burning. Heavy metal pollutants are particularly notable in that they are non-degradable and persist for long periods of time.

- Examples:**
- Air emissions - Car exhaust and power plant emissions contain lead and other metals.
 - Mining- Mineral extraction can leach heavy metals to soil and waters.
 - Manufacturing - Contaminated dusts and runoff from factories.
 - Landfills and Junkyards - Metals leach into the ground.

Heavy Metals Federal Regulations:
TSCA, CERCLA, FDA

HEALTH RISKS

Heavy metals exposure has been linked to:

- Cancer, Liver Damage, Immune System Suppression, Thyroid Disease, Neurodegenerative Illness, Reproductive and Developmental Issues