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Using New Methods in the LCP Superfund Site Proposed Plan

The EPA's Proposed Plan for the LCP Chemicals Site relies on sediment removal, capping, and thin-cover placement to clean up contamination at the site. The EPA does not consider using new cleanup methods at this site that are more efficient and environmentally sound. Outlined below are a few methods that could be used at the LCP Chemicals Superfund site.

Environmental Dredging

Environmental dredging is more precise and less of an environmental disturbance than the traditional form of dredging. Environmental dredging involves the use of either a "cutter dredge" that breaks up and pumps sediment through a pipe to a desired location, or a bucket dredge that scoops up sediment without spilling it into the surrounding environment. Although construction in marsh habitats is a delicate process, dredging, along with many different types of construction work, has been conducted in marshes, wetlands, and other sensitive habitats for many years. Environmental dredging is a well known practice in the field of site cleanup that is meant to remove contaminants from aquatic areas, while not making a mess of things.



Source: cashmandredging.com

Phytoremediation

Phytoremediation is the use of plants to remove contaminants from the ground. Plants take contaminants in the sediment in through their roots and store the contaminants, accumulating them over time; this process is called bioaccumulation. Some plants even break down the contaminants over time. A variety of plants can be used for phytoremediation, and the process is effective in upland areas as well as shorelines (Gomes et al. 2013). Phytoremediation can also be used with bacteria as a way to reintroduce plants to freshly dredged areas. One option for phytoremediation at the LCP site is the use of salt marsh grass, *Spartina*. *Spartina* is the salt marsh grass native to the coastal marshes of Georgia, that can bioaccumulate polychlorinated biphenyls (PCBs) in plant tissues. *Spartina* plants that have bioaccumulated PCBs could be removed, disposed of, and new grasses could be planted to continue the process of removing contaminants from the sediment.

Bioremediation

Bioremediation involves the use of living things, like plants or microbes, to remove or break down contaminants in sediment or soil. There are many examples of bioremediation in the industry of site cleanup. One example is Biotech Restorations, Inc., a North Carolina-based company that specializes in the bioremediation of contaminants like polychlorinated biphenyls (PCBs). Biotech uses a process that makes the naturally occurring bacteria in soil use the PCBs as a food source, thus breaking down the PCBs (Biotech Restorations, Inc.). Although Biotech's previous work has been on soils, dredged sediment could also be treated in this manner.



Source: BioTech Restorations, Inc.

NASA Technologies

NASA is currently working on several methods of polychlorinated biphenyl (PCB) cleanup. One method they have developed for removing and treating PCBs is a "polymer blanket." This "blanket" is filled with a liquid designed to attract PCBs and is placed on top of contaminated sediment. The liquid in the blanket attracts the PCBs, which are soaked up into the blanket. The liquid is then removed from the blanket, and treated using another NASA PCB technology, which breaks down the PCBs into a safe form so that they can be disposed of. The blanket can then be filled with fresh liquid and reused (NASA 2013).

References

Biotech Restorations, Inc. Accessed 20 February 2015.

<http://www.biotechrestorations.com/#/home>

Gomes, Helena I., Celia Dias-Ferreira, and Alexandra B. Ribeiro. 2013. "Overview of in Situ and Ex Situ Remediation Technologies for PCB-Contaminated Soils and Sediments and Obstacles for Full-Scale Application." *Science of the Total Environment*. doi:10.1016/j.scitotenv.2012.11.098.

NASA. May 8, 2013. "In Situ Removal of PCBs from Sediment Systems." Accessed 20 February, 2015.

http://technology.ksc.nasa.gov/technology/TOPS_13579_InSitu_Removal_PCB.htm

U.S. Environmental Protection Agency, Region 4. 2014. "Superfund Proposed Plan: LCP Chemicals Superfund Site Operable Unit 1."