Stormwater: Potential Water Pollutants and Sources Guidelines

Department: Environmental Protection
Program: Stormwater
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Authority: ES&H Manual, Chapter 26, Stormwater

The industrial processes, research operations, and facility maintenance that are routinely performed at SLAC involve many materials that may introduce pollutants to the storm drain system unless these activities are properly managed. The following catalog of potential water pollutants and sources points to additional information for proper material handling. In addition to these, see Stormwater: Best Management Practices Index for all pollution prevention strategies listed in SLAC's general stormwater permit.[1]

Hazardous Materials

Routinely Used Chemicals

Many routinely used chemicals – such as solvents, paints, pesticides, fertilizer, fuels, and other process and maintenance chemicals – can become potential sources of stormwater pollutants unless managed according to appropriate best management practices (BMPs) for storage and use and disposal. (See also Chapter 17, "Hazardous Waste",[2] and Chapter 40, "Hazardous Materials",[3] for additional requirements and handling information.)

Lead

Sources of lead that may contaminate soils and sediment include

- Lead bricks that are used as radiation shielding
- Shot or wire matting (pencil lead, spaghetti lead and lead wool)
- Deteriorating paint from buildings that were painted with lead-based paint. (Lead has not been added to paint since 1978.)

For handling requirements for these and other materials containing lead, see Chapter 20, "Lead Safety".[4] To minimize the concentration of lead due to old paint, maintain buildings to prevent paint from flaking, keeping outside areas clean, and keep paved areas swept (street sweeping) to minimize sediment.

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1 Stormwater: Best Management Practices Index (SLAC-I-750-0A16V-001), http://www-group.slac.stanford.edu/esh/eshmanual/references/stormIndexBMP.pdf
2 *SLAC Environment, Safety, and Health Manual* (SLAC-I-720-0A29Z-001), Chapter 17, "Hazardous Waste", http://www-group.slac.stanford.edu/esh/environment/hazardous_waste/policies.htm
3 *SLAC Environment, Safety, and Health Manual* (SLAC-I-720-0A29Z-001), Chapter 40, "Hazardous Materials", http://www-group.slac.stanford.edu/esh/hazardous_substances/haz_materials/policies.htm
4 *SLAC Environment, Safety, and Health Manual* (SLAC-I-720-0A29Z-001), Chapter 20, "Lead Safety", http://www-group.slac.stanford.edu/esh/hazardous_substances/lead/policies.htm

Metals

Sources of trace metals that may be carried by runoff include zinc and copper from vehicle brake pads, water pipes, flashing on buildings, and material and scrap metal that is stored outdoors but not covered and managed properly. Trace metals may enter the environment as these metal surfaces oxidize, flake, corrode, dissolve or leach away, and metal shavings, bits of electrical wire, and paint chips may be washed into the storm drain. To avoid this

- Sweep all outdoor storage and work areas frequently
- Cover scrap metal bins and any material that can be mobilized by the wind or rain

Oil and Equipment Fluids

Any stationary or mobile equipment or vehicle located where rain or surface runoff can wash oil, fuel, grease, antifreeze, and transmission fluid into the storm drain system is a potential source of pollution. To avoid contaminating runoff

- Park equipment under roofs and overhangs if there are any exposed lubricated or greased parts
- Clean up spills and leaks as soon as detected
- Use drip pans and clean them often

Polychlorinated Biphenyls

Before 1979, polychlorinated biphenyls (PCBs) were a common component of dielectric fluid in such electrical equipment as transformers and klystrons. Most of this equipment has been retro-flushed, but all fluid from electrical equipment must be treated as potentially PCB-contaminated unless it is positively known to be free of PCBs.

In addition to the handling requirements described in Chapter 32, “Polychlorinated Biphenyls”, take the following precautions to contain PCBs:[5]

- Use drip pans and secondary containment to collect drips and leaks
- Keep outside areas clean
- Sweep paved areas to minimize sediment

Potentially Activated Material

Tritium is potentially generated in water that is used in such systems as the accelerator cooling loops. Any activated material that is stored outside must be managed in a manner to prevent runoff of potentially activated material from entering the storm drain system. This is especially the case if the material can be mobilized by wind or rain.

Sediment

Drainage systems can tolerate a certain amount of sediment, since sediment transport occurs naturally, but excessive sediment resulting from construction, irrigation, and disturbed drainage patterns can reduce water quality and impact the health of aquatic

5 *SLAC Environment, Safety, and Health Manual* (SLAC-I-720-0A29Z-001), Chapter 32, “Polychlorinated Biphenyls”, http://www-group.slac.stanford.edu/esh/hazardous_substances/pcb/policies.htm

organisms. Such operations must be managed so that any additional sediment load to San Francisquito Creek is minimized. See Stormwater: BMP Category 11 – Contaminated or Erodible Surface Area Management.[6]

Other Material and Debris

Any material that can affect the water quality of San Francisquito Creek must be controlled. This includes transportable material and debris (such as packing peanuts and cigarette butts), which can impact color, temperature, turbidity, salinity and nutrients in the creek.

6 Stormwater: BMP Category 11 – Contaminated or Erodible Surface Area Management (SLAC-I-750-0A16E-011), http://www-group.slac.stanford.edu/esh/eshmanual/references/stormBMP11Erosion.pdf