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Municipal Vehicle Fueling

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Minimum Measure: Pollution Prevention/Good Housekeeping for Municipal Operations

Subcategory: Municipal Activities

Description

Fueling fleets of municipal vehicles can generate spills and leaks of fuel (gasoline and diesel fuel) and heavy metals - disproportionately toxic compounds that if washed into the storm drain system by stormwater runoff can seriously impair the water quality of nearby waterbodies. To prevent such discharges, municipal officials can employ a variety of BMPs. They frequently have municipal vehicles refueled at offsite facilities, and then only in designated areas. They store fuel in enclosed, covered tanks. They implement spill controls and train employees and subcontractors in proper fueling procedures (CASQA, 2003a).

This fueling island is roofed and absorbent materials are provided in case of spills. However, the used absorbent hasn't been swept up and disposed of properly

Applicability

Municipal activities require the use of a variety of vehicles and equipment, such as transit buses, fire trucks, police cruisers, school buses, and public works and maintenance vehicles. These vehicles may refuel at facilities located at numerous municipal facilities. The BMPs suggested in this fact sheet apply to fueling operations regardless of location.

Siting & Design Considerations

Designated fueling areas should be designed to prevent stormwater runoff and spills. The California Stormwater Quality Association recommends that fuel-dispensing areas be paved with cement, concrete, or an equivalent impervious surface, with a two to four percent slope to prevent ponding, and separated from the rest of the site by a grade break or berm that prevents run-on of stormwater.

Fuel dispensing areas should be covered, and the cover's minimum dimensions must be equal to or greater than the area within the grade break or the fuel dispensing area. The cover should not drain onto the fuel dispensing area. Use a perimeter drain or slope the pavement inward so that runoff drains to a blind sump. It might be necessary to install and

maintain an oil control device in catch basins that might receive runoff from the fueling area.

For facilities where equipment is being fueled with a mobile fuel truck, consider establishing a designated fueling area. Place temporary "caps" over nearby catch basins or manhole covers so that if a spill occurs it is prevented from entering the storm drain (CASQA, 2003b). A form of secondary containment should be used when transferring fuel from the tank truck to the fuel tank. Storm drains in the vicinity should also be covered. Install vapor recovery nozzles to help control drips as well as reduce air pollution (CASQA, 2003b).

All facilities with fueling areas should have a spill prevention plan and necessary spill kits located nearby. A spill prevention plan [PDF - 55 KB - 5 pp] specifies material handling procedures and storage requirements, and identifies spill cleanup procedures for areas and processes in which spills may potentially occur. The plan standardizes operating procedures and employee training in an effort to minimize accidental pollutant releases that could contaminate stormwater.

Limitations

Old, outdated equipment and facilities can limit the implementation of appropriate vehicle fueling BMPs. Many municipal fueling areas are uncovered, poorly located or drained, or use equipment prone to leaking or spills. It can be costly to retrofit existing facilities or build new fueling islands that provide a greater degree of stormwater protection. Retraining staff and regularly inspecting facilities also requires staff time.

Maintenance Considerations

Fuel-dispensing areas should be inspected regularly. Inspectors should:

- Check for external corrosion and structural failure in aboveground tanks.
- Check for spills and overfills due to operator error.
- Check for failure of any piping systems.
- Check for leaks or spills during pumping of liquids or gases from a truck or rail car to a storage facility or vice versa.
- Visually inspect new tank or container installations for loose fittings, poor welds, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, tank walls, and piping systems. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
- Above-ground tanks should be tested periodically for integrity by a qualified professional.

Dry cleanup methods should be employed when cleaning up fuel-dispensing areas. Such methods include sweeping to remove litter and debris and using rags and adsorbents for leaks and spills. Water should not be used to wash these areas. During routine cleaning, use a damp cloth on the pumps and a damp mop on the pavement, rather than spraying with a hose (Sacramento Stormwater Management Program, 1992). Fuel dispensing nozzles should be fitted with "hold-open latches" (automatic shutoff) except where prohibited by local fire departments. Signs can be posted at the fuel dispenser or island warning vehicle owners/operators against "topping off" vehicle fuel tanks.

Written procedures should be provided to employees who will be using fueling systems that describe these BMPs.

Effectiveness

It is difficult to quantify the effectiveness of vehicle fueling BMPs. However, experience has shown that implementing such BMPs will reduce the likelihood of spills reaching

receiving waters. Furthermore, a related study on stormwater runoff from an auto recycling facility found that stormwater management practices and pollution prevention techniques can decrease the concentration of pollutants in stormwater runoff (Swamikannu 1994). Like municipal fueling facilities, auto recycling facilities typically contain higher concentrations of oil, phenols, BOD, metals, and other pollutants compared to other sources. Through the use of structural and non-structural pollution prevention BMPs, the 10-year study of a 17-acre auto-recycling facility in Los Angeles was able to show substantial reductions in the concentrations of metals, oil, and grease. The full study (Auto Recycler and Dismantler Facilities: Environmental Analysis fo the Industry with a Focus on Stormwater Pollution EXIT Disclaimer) is currently available (as of 4/10/06). For summary information of the study, see Article 140 in the Practice of Watershed Protection.

Cost Considerations

To avoid future maintenance costs, new and substantially remodeled facilities should implement high-quality design techniques during the initial installation. Retrofitting existing fueling areas with BMPs to help minimize stormwater exposure or spills can be expensive. Staff time for training new-hires, along with staff time for periodic re-training of other employees, will also need to be considered. Spill kits should be purchased and made available at each fueling area and on each mobile fueling truck. Spill kits capable of cleaning-up five to six gallons of spilled liquid, and that include socks, pads, gloves, one or more disposal bags, and a watertight container, range in cost from $24 to $74. A 16- to 20-gallon spill kits cost $85 to $149.

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