# Stormwater Best Management Practice

# Municipal Vehicle Fueling

**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 stormwater washes them into the storm drain system, can seriously impair the quality of nearby waterbodies. To prevent such discharges, municipal staff can employ practices that involve site design, regular maintenance and inspection, and focusing on pollution prevention during routine operations.

## Applicability

Municipalities use a variety of vehicles and equipment, such as transit buses, fire trucks, police cruisers, school buses, and public works and maintenance vehicles. The practices discussed below can apply to any location where fueling operations take place.

## Siting and Design Considerations

Municipal staff should design fueling areas to prevent spills and the contamination of stormwater discharges. Because spills can still occur, they should also incorporate features that contain spilled fuel. For example, the California Stormwater Quality Association recommends that designers pave fuel-dispensing areas with cement, concrete or an equivalent impervious surface (for asphalt paving, municipal staff should apply a suitable sealant); incorporate a 2 to 4 percent slope to prevent ponding, and separate the area from the rest of the site with a grade break or berm that keeps away stormwater (CASQA, 2003). Similarly, the City of Seattle requires that spill containment berms be at least 4 inches tall to both contain spilled liquids and keep stormwater away (City of Seattle, 2017).

Designers should cover fuel-dispensing areas, and the cover's minimum dimensions should 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. Designers can use a perimeter drain or sloped pavement to direct stormwater inward to a blind sump. Site conditions or local regulations may require the installation of an oil control device in catch basins that receive stormwater flow from the fueling area.


Fueling areas can be covered to reduce exposure to stormwater.

Vapor recovery nozzles can help control drips as well as reducing air pollution (CASQA, 2011). Fuel-dispensing nozzles should have “hold-open latches” (automatic shutoff) except where local fire departments prohibit them. Signs at the fuel dispenser or island should warn vehicle owners/operators against “topping off” vehicle fuel tanks.

For any facility where a mobile fuel truck fuels equipment, municipal staff should consider designating a fueling area and using temporary containment measures. Staff can place temporary cap seals over nearby catch basins or manhole covers to prevent any spills from entering the storm drain. Staff can also use a secondary containment device, such as an absorbent sock, when transferring fuel from a tank truck to a vehicle’s fuel tank.

Facilities with fueling areas should have spill prevention plans and necessary spill kits nearby. A spill prevention



EPA-832-F-21-030I
December 2021

plan specifies material handling procedures and storage requirements and identifies spill cleanup procedures for areas and processes in which spills may occur. The plan standardizes operating procedures and training of employees and contractors to minimize accidental pollutant releases that could contaminate stormwater. (Consult the Spill Response and Prevention fact sheet for more information.)

## Operation and Maintenance Considerations

Regular operation and maintenance practices are just as important as proper facility design in preventing and containing spills. Municipal staff should routinely implement the following example measures:

- Check for external corrosion, leaks and structural failure in aboveground storage tanks.
- Check for spills and overfills due to operator error, including dried residue that may be evidence of past spills.
- Check for failure of any pumping, piping or dispensing 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.
- Periodically enlist a qualified professional to test the integrity of aboveground storage tanks.
- Ensure there is clear tagging or labeling on all fuel valves.

In the event of a spill, municipal staff should use dry cleanup methods. These include sweeping to remove litter and debris and using rags and adsorbents for leaks and spills. Staff should not use water to wash these areas. During routine cleaning, staff should use damp cloths on the pumps and damp mops on the pavement, rather than spraying with hoses.

Municipalities should provide written procedures that describe these practices to all employees who will be using fueling systems.

## Limitations

Municipalities often lack the funding for proper vehicle fueling practices. Old, outdated equipment and facilities can limit the implementation of appropriate practices. Many municipal fueling areas have no covering, have improper designs (e.g., no impervious surfaces), are in bad locations, have poor drainage (e.g., near downstream waterbodies), or use equipment prone to leaking or spills. It can be costly to retrofit existing facilities or build new fueling islands that provide better stormwater protection. Regularly training staff and inspecting facilities also requires funding that may not be available.

## Effectiveness

Vehicle fueling stations are well-known stormwater hot spots, with the potential to discharge hydrocarbons and heavy metals in concentrations far greater than those from surrounding land (Schueler & Shepp, 1995). As such, the potential environmental harm from accidental fuel spills can be significant. Although it is difficult to quantify the effectiveness of vehicle fueling practices, experience has shown that they make spills less likely to reach receiving waters. Additionally, studies have shown that certain treatment devices, such as oil-water separators or sand filters, can reduce the harmful effects of contaminated stormwater (Robbins, 2000; Schueler & Shepp, 1995).

Municipalities may develop metrics to assess relative progress against baseline conditions. Resources to help municipalities develop these metrics are available from California's State Water Resources Control Board.

## Cost Considerations

The costs of vehicle fueling pollution prevention practices are highly variable, as they depend on the need for new or retrofitted facilities, the condition of existing facilities, and ongoing maintenance requirements.

To reduce future maintenance costs, municipalities can design new facilities with high-quality features such as designated fueling areas with proper impermeable surfaces, protection from wet weather and sufficient containment structures. They should also consider staff time for training new hires, along with staff time for periodic retraining of other employees.

Municipalities should purchase spill kits and make them available at each fueling area and on each mobile fueling truck. Based on a review of current commercial supply companies, spill kits capable of cleaning up 5 to 6 gallons of spilled liquid range in cost from $25 to $100. These kits include standard items like absorbent socks, pads, gloves, one or more disposal bags, and a watertight container.

**Additional Information**

Additional information on related practices and the Phase II MS4 program can be found at EPA's National Menu of Best Management Practices (BMPs) for Stormwater website

## References

California Stormwater Quality Association (CASQA). (2003). Vehicle and equipment fueling SC-20. In *Stormwater best management practice handbook: Municipal.*

California Stormwater Quality Association (CASQA). (2011). Vehicle and equipment fueling NS-9. In *Stormwater best management practice handbook: Construction.*

City of Seattle. (2017). 3.2.2. BMP 10: Fueling at dedicated stations. In *City of Seattle stormwater manual* (Vol. 4).

Robbins, G. (2000). Pollution prevention for auto recyclers. *Watershed Protection Techniques*, *1*(4): 224–226. Center for Watershed Protection.

Schueler, T., & Shepp, D. (1995). Hydrocarbon hotspots in the urban landscape. In *Seminar publication—National Conference on Urban Runoff Management: Enhancing urban watershed management at the local, county, and state levels* (EPA/625/R-95/003). pp. 259–264.