

Airports and the Multi-Sector General Permit (MSGP)

The MSGP is a permit designed to prevent stormwater pollution from entering into our surface waters. Anti-icing and deicing fluids (ADFs) used on aircraft surfaces and runways are a pollutant of concern for Sector S facilities. ADFs often contain very high concentrations of ethylene glycol, an organic chemical that has a harmful effect on fish and other aquatic species due to its high biological oxygen demand. ADFs also contain chemical additives, such as corrosion inhibitors and flame retardants. These additives are often toxic. The following BMPs suggest ways to reduce the amount of ADFs and ethylene glycol used on aircraft surfaces.

BMPs reduce, eliminate or prevent stormwater pollution from reaching Vermont's rivers and streams

What is a Stormwater BMP?

Best Management Practices, commonly referred to as BMPs, are effective ways to reduce the amount of pollution in stormwater leaving your facility. There are two types of BMPs:

- Structural BMPs are things that can be built on site and include physical structures like berms, settling ponds, oil-water separators, and storm resistant shelters.
- Behavioral BMPs are changes that can be made in the way a person operates their business. Behavioral BMPs include conducting regular inspections, regular maintenance of vehicles and machinery, prohibition of certain activities, and employee training.

An effective Stormwater Pollution Prevention Plan (SWPPP) will include both types of BMPs.

Stormwater BMPs for Airports — Sector S

The following list of suggested BMPs is organized by activity and can be included in your facility's Stormwater Pollution Prevention Plan (SWPPP). The BMPs cover the following operations:

- Runway Anti-icing and Deicing
- Wing Deicing
- Managing Glycol Solutions
- Aircraft, Vehicle, and Equipment Maintenance and Cleaning Areas
- Spill Prevention and Response
- Employee Training



Runway Anti-icing and Deicing

- Evaluate current chemical application rates to avoid over application.
- Install devices to meter the amount of chemical applied to runways.
- Emphasize anti-icing. Preventing the formation of ice requires less chemicals than deicing.
- Install a runway ice detection system (RID) or “pavement sensor” to monitor runway temperatures and inform operators when temperatures are approaching freezing conditions. This increases the likelihood of timely and effective anti-icing operations.
- Avoid applying deicing and anti-icing chemicals when it is extremely cold and very dry. Such conditions make it difficult for the chemical to adhere to the ice surface.
- Consider “pre-wetting” deicing chemicals to improve the adhesion to the iced surface and increase the efficiency rate of the application.
- Use alternative deicing products that have lower toxicities and are readily biodegradable such as potassium acetate, sodium acetate, sodium formate, or CMA. Develop a schedule to phase out the use of urea or glycol deicers.
- Pre-treat or promptly treat surfaces to inhibit the strong bonding of ice.

Wing Deicing

- Evaluate current chemical application rates to avoid over application. Some smaller airports use no anti-fluids.
- Use Type I and Type II anti-icing and deicing fluids (ADF) when longer holdover times are not a significant consideration. Type I and II contain lower concentrations of additives.
- Develop a system to recover ADF. Captured ADFs can be sold to a recycler and reused for other non-aircraft applications.
- Purchase ADFs that use environmentally benign, less toxic chemicals and additives.
- Consider mechanical deicing technologies like boot deicing and electrical restive heating.

- Develop an integrated approach. Infra-red deicing systems and hot air blast systems can reduce the amount chemical deicing required to prepare the plane.
- Consider a computerized spraying system. It reduces the volume of ADFs used and the time needed for deicing and can also increase the efficiency of ADF collection.
- Spray ADFs from truck mounted booms to deliver more fluid to the target. Spraying closer to the plane reduces over spray and waste is reduced.
- Use ice detection systems and sensors. There are a variety of sensors that can detect ice on aircraft surfaces that are difficult to visually inspect. Ice sensors can help determine if deicing is unnecessary.

Managing Glycol Solutions

- Consider air temperature when preparing glycol solutions (i.e., “blend to temperature”). A concentration of 30% may be sufficient for some conditions.
- Avoid applying glycol-based deicers near storm drains.
- Follow the manufactures’ recommendations when preparing and applying ADFs.



- Properly maintain spreading equipment. This will increase the efficiency of spreaders, reducing the possibility of over application.

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- Recycle glycol. Fluids containing as little as 5% glycol can be recycled. Recent technologies have made on site recycling of glycol possible at larger airports.

Aircraft, Vehicle, and Equipment Maintenance and Cleaning Areas

- Perform maintenance and cleaning activities indoors or in a designated, contained area. Prohibit such activities outside of these areas.
- Use drip pans under all aircraft, vehicles and equipment waiting for maintenance.
- Regularly inspect for filling or full drip pans.
- Maintain an organized inventory of all chemicals and materials.
- Provide secondary containment for fuels and hydraulic fluids. For example, store containers in tubs or buckets.
- Drain all parts prior to disposal.
- Do not pour liquid waste down floor drains, sinks, or outdoor storm drain inlets.
- Properly dispose of greasy rags, oil filters, air filters, batteries, spent coolant, and degreasers. Promptly transfer used fluids to an appropriate storage container.
- Store used batteries in a non-leaking, non-corrosive container.
- Do not “wash down” the apron or hanger floor. Always use dry clean up methods.
- Direct stormwater from maintenance and cleaning area to treatment areas.
- Fuel vehicles on impervious surfaces. Use funnels and drip pans to reduce spillage.

- Wash vehicles at a commercial facility or wash vehicles on an impervious surface. Use only non-phosphorous soaps.
- Wash water must be directed away from any streams, stormwater drains, or drainage ditches. Direct wash water to a vegetated area.

Spill Prevention and Response

- Develop a spill prevention and response plan that clearly states procedures to stop the source of a spill and outlines the disposal of contaminated materials.
- Locate spill kits in high activity areas.
- Frequently and regularly inspect maintenance, cleaning, storage, and fueling areas for potential spills.

Employee Training

- Inform employees of stormwater pollution sources, prevention, and applicable BMPs.
- Inform employees who conduct deicing and anti-icing operations that ADFs are easily carried by stormwater to receiving waters.
- Instruct employees to properly implement applicable BMPs.
- Train employees in proper ADF application techniques. Properly trained employees will use less ADF.
- Educate employees about the facility’s storm drains. Tell employees whether the facility’s storm drains and collection structures are routed to a sanitary sewer or to surface waters.
- Ensure that all employees are familiar with the facility’s spill prevention and response



Questions or Assistance with your Stormwater SWPPP, contact:

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