



February 10, 2010

Update: Proposed EPA Effluent Limitation Guidelines for Airport Deicing

On August 28, 2009 the Federal Register published the proposed rule for Effluent Limitation Guidelines and New Source Performance Standards for the Airport Deicing Category. The EPA has extended the public comment period an additional 60 days and will now accept public comments through February 26, 2010. This document is meant to provide a brief summary of the proposed regulations and a few action steps to assist those affected.

For the entire proposal, technical development documents, economic analysis and more, please go to the US-EPA website at <http://www.epa.gov/guide/airport>

Scope and Applicability

The U.S. EPA is proposing new regulations that will affect deicing operations. The regulation that was developed under the national pollutant discharge elimination system (NPDES) is proposed to reduce pollutant discharges by more than 40 million pounds and cost more than \$90 million annually. The proposal would establish effluent limitation guidelines and target larger commercial airports with high flight volumes.

Figure IV-1 in the EPA proposal provides a chart of the proposed scope of the regulation.

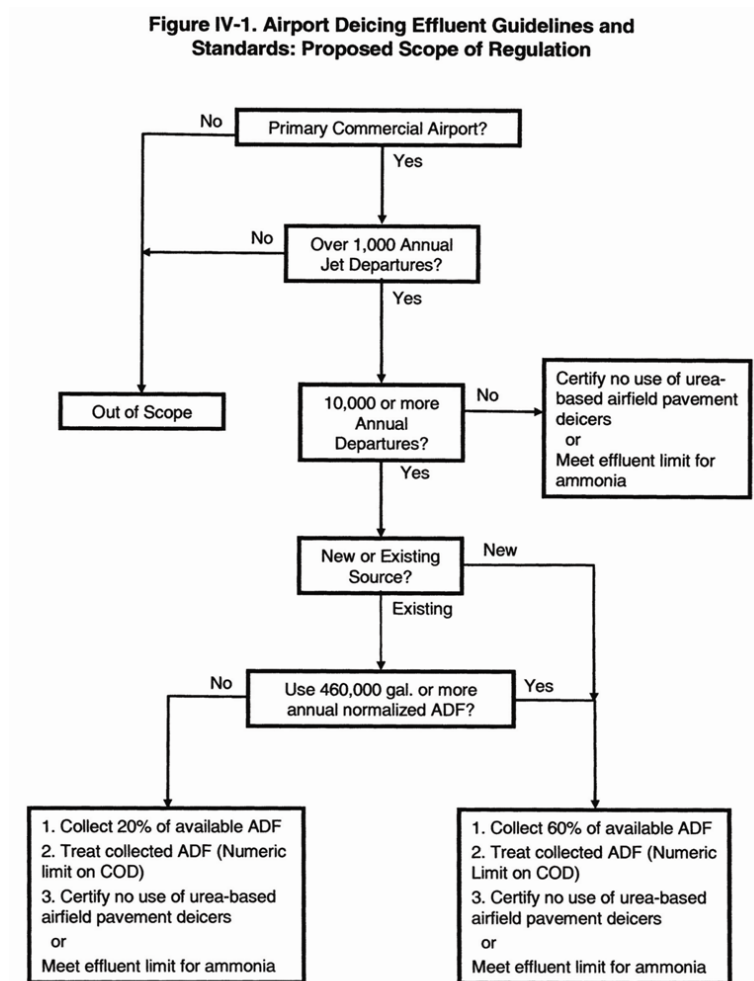




Table IV-1 then provides a summary of the proposed Airport Deicing Effluent Limitation Guidelines and Standards.

TABLE IV-1—SUMMARY OF PROPOSED AIRPORT DEICING EFFLUENT LIMITATION GUIDELINES AND STANDARDS

Regulatory level	Technology basis	Technical components	
		Airports > 1,000 annual jet departures and >= 10,000 annual departures	Airports > 1,000 annual jet departures and < 10,000 annual departures
BAT	1. 60% or 20% ADF capture. 2. Biological treatment ... 3. Pavement deicer product substitution.	1. Capture 60% of available ADF (for airports having >= 460,000 gal. ADF usage) or capture 20% (for airports < 460,000 gal. ADF usage). 2. Treat wastewater to meet effluent limit for chemical oxygen demand (COD). 3. Certify use of non-urea-based pavement deicers or Meet effluent limit for ammonia.	1. Certify use of non-urea-based pavement deicers or Meet effluent limit for ammonia.
NSPS	1. 60% ADF capture 2. Biological treatment ... 3. Pavement deicer product substitution.	1. Capture 60% of available ADF 2. Treat wastewater to meet effluent limit for chemical oxygen demand (COD). 3. Certify use of non-urea-based pavement deicers or Meet effluent limit for ammonia.	1. Certify use of non-urea-based pavement deicers or Meet effluent limit for ammonia.

Note: All references to ADF are for normalized ADF, which is ADF less any water added by the manufacturer or customer before ADF application.

The proposed effluent guidelines address both the wastewater collection practices used by airports, and the treatment of those wastes. Airports would be required to collect a minimum specified portion of their spent aircraft deicing fluid (ADF) and treat the associated wastewater. Additionally, airports performing airfield pavement deicing would be required to certify that they are using airfield pavement deicers without urea or monitor and meet numeric effluent limits for ammonia.

Affected airports would need to:

- develop a storm water pollution prevention plan (SWPPP): including a drainage area site map, documentation of measures used for management of runoff, an evaluation of runway and aircraft deicing operations, and implementation of a program to control or manage contaminated runoff, including consideration of various listed control practices;
- implement deicing source reduction measures: including minimizing or eliminating the use of urea and glycol-based deicing chemicals; minimizing contamination of storm water runoff from runway and aircraft deicing operations; evaluating whether over-application of deicing chemicals occurs; and consider use of various listed source control measures;

Proposed Limits and Operational Impacts

Under the proposed rules, airports would be required to monitor four main parameters of their storm water discharges: biochemical oxygen demand - 5 day (BOD5), chemical oxygen demand (COD), ammonia and pH.

After reviewing and implementing a SWPPP, and conducting outfall testing, many airports may find they meet the effluent guidelines by using products and procedures they have used in the past. After testing, if an airport finds they do not meet the effluent guidelines, it may be determined that one or more of the four main parameters has an impact on deicer selection and application practices.



BOD5 and COD

A significant change proposed by the EPA is to measure COD. For aircraft deicing fluid discharges, the daily maximum limitation for COD is proposed to be at 271 mg/L. The weekly average limitation of COD has the proposed limitation at 154 mg/L. In comparison, the EPA tentatively estimated 112 mg/L as the 95th percentile of the monthly averages using a statistical model.

The EPA recommends that airports target 41 mg/L as the long-term average value of their treatment systems. Therefore, the daily maximum limitation of 271 mg/L is about seven times greater than the long-term average achievable by the model technology.

Monitoring COD along with BOD5 may have an impact with respect to product selection and application for a particular site. The measure of biodegradability is Oxygen Demand and the ratio of BOD5 to COD (calculated by dividing BOD5 by the COD) will show how quickly a chemical biodegrades. The higher the number, the quicker the product degrades (and consumes oxygen in the process).

The rate of biodegradability and local factors may affect the analysis of water at the outfall, so the assumption that applying products with the lowest biological oxygen demand or lowest chemical oxygen demand may not always provide the lowest oxygen demand at the storm water outfall. For instance, if airport runoff has an overland or tortuous path, a significant portion of the deicer could be expected to biodegrade before it reaches an outfall or, a waste water treatment system may work better with a more biodegradable influent. In cases such as these, it would be best to use a highly biodegradable product. However, if the runoff has a quick and direct path to the receiving stream, a slower degrading product may be better since biodegradation would take place off airport property.

For example: Cryotech NAAC, solid sodium acetate, has a slightly higher BOD5 and COD than sodium formate. However, NAAC has a very high ratio of BOD5 to COD making NAAC highly biodegradable, in contrast, this ratio is very low for sodium formate. It is for this reason that many customers choose NAAC over sodium formate. NAAC biodegrades quickly and is less persistent after application.

The requirement to measure COD gives airports the opportunity to address airport-specific runoff treatment and fate predictions rather than relying on BOD5 alone.

Also, using best practices, like anti-icing (applying product before precipitation) increases effectiveness and minimizes chemical usage. Using products that are good anti-icers as well as effective deicers, (either alone or in combination with other products) can optimize the amount of chemical used and reduce the amount present in the outfall streams. Cryotech provides complimentary training to help customers with all aspects of deicer use and application.

Ammonia

Ammonia is the principal pollutant generated by urea-based pavement deicers. The guidance of the EPA is to discontinue the use of urea-based deicers since ammonia, even in very small amounts, is extremely toxic to aquatic life. The EPA set a proposed limitation for ammonia at only 14.7 mg/L for airfield pavement deicing discharges, with a long-term average value of 5.24 mg/L. Ammonia from deicing operations can be eliminated by using products that do not contain urea. Cryotech E36, liquid potassium acetate, and NAAC are examples of certified pavement deicers that do not contain urea or other ammonia producing compounds.



pH

The measure of acidity or alkalinity, or pH, is also listed as a key parameter. The EPA did not propose pH discharge limitations from aircraft deicing fluid or airfield pavement deicing operations in the guidelines. Those limits will likely be site and permit specific and expected compliance would have a pH range between 6 and 9.

As a general rule, when dilution occurs from precipitation, it trends the pH of the runoff toward the neutral pH range between 6.5 and 7.5.

Deicing products themselves need to meet specific requirements to be used around or on aircraft. They must pass certain corrosion tests. The pH of a particular deicer is formulated as part of the corrosion inhibitor package. For instance, the pH of Cryotech E36 is selected to minimize the amount of corrosion inhibiting chemicals, and allows the selection of additives that have a very low aquatic toxicity.

Action Steps

Some of the steps airport operators can take:

- Read and understand the proposed regulation and its applicability to your facility.
- Determine if your airport meets the definition of a “large primary commercial airport.” Even if it does not, you may consider implementing the proposed standards as a pollution prevention “best practice.”
- Determine whether you are a direct or indirect discharger and if there are current NPDES permits in place at your site.
- Gather data on storm water discharge flows (i.e. BOD5, COD, ammonia and pH).
- Work with your pavement deicer applicators, purchasing group, airlines, tenants and deicer suppliers to determine if any of the dry or liquid pavement/runway deicers used on site contain urea. Ask suppliers for certification that their deicers do not contain urea.
- Work with your ADF (aircraft deicing fluid) applicators, purchasing group, airlines, tenants and ADF suppliers to determine the seasonal monthly usage of ADF. Note: ADF is defined in the proposal as normalized ADF, which does not include any water added by the manufacturer or customer before ADF application.
- Looking at Figure IV-1, assess the impact of the proposed regulations on your operations and determine the changes that need to be implemented to comply.
- Make comments to the U.S. EPA directly or through an industry group: American Association of Airport Executives (AAAE), Airports Council International-North America (ACI-NA) and the Air Transport Association (ATA), etc.

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