



National Pollutant Discharge Elimination System (NPDES)

Variances

The CWA and federal regulations provide limited mechanisms for variances from applicable technology-based requirements. An NPDES permit applicant must meet very specific data and variance application deadline requirements before a variance may be granted. A variance provides a unique exception to a particular requirement, and permittees should not expect to routinely receive variances. Variance applications are submitted by the NPDES permit applicant and must be submitted before the close of the public comment period of the permit, except for Fundamentally Different Factors (FDF) variance requests, which must be requested by the NPDES permit applicant within 180 days of an effluent guidelines publication.

CWA Section	40 CFR Reference	Type of Variance	Approval Authority	Application Deadline
301(g)	125, Subpart F	Nonconventional Pollutant	EPA Region	During permit comment period
301(n)	125, Subpart D	Fundamentally Different Factors	EPA Region	180 days from the date the standards are published
NA	122.45(g)	Net Intake or Net/Gross	NPDES Authority	During permit comment period

Nonconventional Pollutant

CWA section 301(g) and the regulations at § 122.21(m)(2) provide for a variance from new or revised “*best available technology economically achievable*” (BAT) effluent guidelines for certain nonconventional pollutants because of local environmental factors, so long as the discharger demonstrates that it is meeting “*best practicable control technology currently available*” (BPT) and that the discharge does not prevent attainment of water quality standards and would not result in additional requirements on other point or nonpoint sources.

The pollutants for which a facility may request a CWA section 301(g) variance are ammonia, chlorine, color, iron, and phenols. The CWA also provides a process to petition to include additional pollutants

on this list. Industries with facilities that have applied for CWA section 301(g) variances include Iron and Steel Manufacturing (Part 420), Steam Electric Power Generating (Part 423), Inorganic Chemicals Manufacturing (Part 415), Nonferrous Metals Manufacturing (Part 421), Aluminum Forming (Part 467), and Pesticides Chemicals (Part 455) facilities. In addition to meeting the application deadline, the discharger must file a variance application that meets the following requirements:

- The proposed modified requirements must result in compliance with BPT and water quality standards of the receiving stream.
- No additional treatment will be required of other point or nonpoint source dischargers as a result of the variance approval.
- The modified requirements will not interfere with attainment or maintenance of water quality to protect public water supplies, or with protection and propagation of a balanced population of shellfish, fish, and wildfowl, and will allow recreational activities in and on the water.
- The modified requirements will not result in quantities of pollutants that can reasonably be anticipated to pose an unacceptable risk to human health or the environment, cause acute or chronic toxicity, or promote synergistic properties.

The permit writer should review the request to ensure that it complies with each of the requirements for this type of variance. This variance request can involve a great deal of water quality assessment, including aquatic toxicity, mixing zone and dilution model analysis, and possible site-specific criterion development. In addition, it might be necessary to assess many complex human health effects, including carcinogenicity, teratogenicity, mutagenicity, bioaccumulation, and synergistic propensities.

Fundamentally Different Factors (FDF)

Alternative effluent limitations or standards different from the otherwise applicable requirements in effluent guidelines may be authorized by EPA if an individual facility is fundamentally different with respect to factors considered in establishing the limitations or standards otherwise applicable to that facility's industrial category. Such a modification is known as a fundamentally different factors (FDF) variance.

Facilities must submit all FDF variance applications to the appropriate Director no later than 180 days from the date the limitations or standards are published in the Federal Register. An FDF variance is not available to a new source subject to NSPS. The regulations at § 125.31(d) identify six factors that may be considered in determining if a facility is fundamentally different:

- Nature or quality of pollutants contained in the raw process wastewater.
- Volume of the process wastewater and effluent discharged.
- Non-water quality environmental impact of control and treatment of the raw wasteload.
- Energy requirements of the application of control and treatment technology.
- Age, size, land availability, and configurations of discharger's equipment or facilities as well as processes employed, process changes, and engineering aspects of the application of control technology.
- Cost of compliance with required control technology.

EPA must determine whether, on the basis of one or more of those six factors, the facility in question is fundamentally different from the facilities and factors considered by EPA in developing the nationally applicable effluent guidelines. The regulation also lists four other factors that may not provide a basis for an FDF variance:

- Infeasibility of installation within the time allowed by the CWA.
- Assertion that the national limitations cannot be achieved with the appropriate waste treatment facilities installed (if the assertion is not based on one or more of the six FDF factors above).
- A discharger's ability to pay for the required water treatment.
- The impact of a discharge on local receiving water quality.

In addition, under § 125.31(b)(3), a request for limitations less stringent than the national limitation may be approved only if compliance with the national limitations would result in either of the following:

- Removal cost wholly out of proportion to the removal cost considered during development of the national limitations.
- Non-water quality environmental impact (including energy requirements) fundamentally more adverse than the impact considered during development of the national limitations.

The conditions for approval of a request to modify applicable pretreatment standards and factors considered are the same as those for direct dischargers.

The legislative history of CWA section 301(n) underscores the necessity for the FDF variance applicant to establish eligibility for the variance. EPA's regulations at § 125.32(b)(1) are explicit in imposing that burden on the applicant. The applicant must show that the factors relating to the discharge controlled by the applicant's permit, which are claimed to be fundamentally different are, in fact, fundamentally different from those factors considered by the EPA in establishing the applicable effluent guidelines.

Intake Allowance or Net/Gross Variance

Some facilities might be unable to comply with effluent guidelines because of pollutants in their intake water. Under certain circumstances, the NPDES regulations allow credit for pollutants in intake water. Specifically, permit writers are authorized to grant net credits for the quantity of pollutants in the intake water where (1) the applicable effluent guidelines specify that the guidelines are to be applied on a net basis; or (2) the pollution control technology would, if properly installed and operated, meet applicable effluent guidelines without the pollutants in the intake waters.

The following requirements are included in § 122.45(g) for establishing net limitations:

- Credit for conventional pollutants, such as BOD5 or TSS, are only authorized where the constituents resulting in the effluent BOD5 and the TSS are similar between the intake water and the discharge.
- Credit is authorized only up to the extent necessary to meet the applicable limitation or standard, with a maximum value equal to the influent concentration.

- Intake water must be taken from the same body of water into which the discharge is made.
- Net credits do not apply to the discharge of raw water clarifier sludge generated during the treatment of intake water.

The permitting authority must include influent monitoring in the permit when this type of variance is granted.

Thermal Discharge – CWA Section 316(a) Variance

CWA section 316(a) and the regulations at § 122.21(m)(6) provide for variances from thermal effluent limitations in NPDES permits. EPA has only promulgated thermal limitations in effluent guidelines for two industrial sectors: Beet Sugar Processing Subcategory of the Sugar Processing Point Source Category (Part 409 Subpart A) and the Cement Manufacturing Point Source Category (Part 411, Subparts A and B).

Most thermal limitations are based on water quality standards, so most thermal variances actually are not true technology-based variances. Dischargers must apply for a thermal discharge variance with its permit application if the thermal effluent limitation is based on an effluent guideline or during the permit comment period if the thermal effluent limitation is based on a WQBEL.

The approval authority for a thermal discharge variance request is the state permitting authority or the EPA Region if there is no approved state NPDES program. Less stringent alternative thermal effluent limitations may be included in permits if the discharger properly demonstrates that such effluent limitations are more stringent than necessary to assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made, taking into account the cumulative impact of its thermal discharge together with all other significant impacts on the species affected. Once a variance is granted, the discharger must still reapply for the variance each permit term. The majority of thermal variance requests are from power plants seeking relief from water-quality based effluent limitations.

Secondary Treatment Variance for Ocean Discharges – CWA 316(a)

CWA section 301(h) provides for variances from secondary treatment standards for publicly owned treatment works (POTWs) that discharge into ocean waters if the modified requirements do not interfere with attainment of water quality. The deadline to apply for a CWA section 301(h) variance (December 29, 1982) has passed, thus no new facilities may apply for this variance. Dischargers that have been granted a 301(h) variance must renew the variance each permit term.

Eligible dischargers meeting the set of environmentally stringent criteria in CWA section 301(h) receive a modified NPDES permit waiving the secondary treatment requirements for the conventional pollutants of BOD5, TSS, and pH. EPA has promulgated specific regulations pertaining to CWA section 301(h) that are provided in Part 125, Subpart G.

All CWA section 301(h) variance modified permits must contain the following specific permit conditions:

- Effluent limitations and mass loadings that will assure compliance with Part 125, Subpart G.
- Requirements for pretreatment program development, a nonindustrial toxics control program, and control of combined sewer overflows.
- Monitoring program requirements that include biomonitoring, water quality, and effluent monitoring.
- Reporting requirements that include the results of the monitoring programs.

No new or substantially increased discharges from the point source of the affected pollutant can be released above that volume of discharge specified in the permit.