

3.2.7.2 Overview of the Permit/Site Specific Permits/Effluent Limits/Final Effluent Limits

Applicability:

Discusses the development of final effluent limits for issuance in new permits, permit modifications and permit renewals.

Content:

Final effluent limits for site-specific permits are based on the type of wastewater treated and released by the facility. The basic categories of wastewater are:

- domestic waste, or primarily domestic waste, that can be discharged from both publicly and privately owned treatment works;
- industrial waste from manufacturing, commercial, mining and silvacultural operations;
- agricultural waste from animal feeding operations (AFOs) and concentrated animal feeding operations (CAFOs); and
- storm water from land disturbance sites, municipal separate storm sewer systems (MS4s) or industrial facilities.

Information about animal waste is found in Permits Manual topics dealing with no-discharge permits, AFOs and CAFOs. Storm water information is found in topics dealing with storm water sources, land disturbance, MS4 permits and industrial permits.

For facilities that treat primarily domestic wastewater or industrial wastewater, the permit writer must consider effluent limits based on either the technology to treat pollutants (technology based limits) or the designated uses of the receiving waters (water quality based limits). Technology based limits for municipal treatment plants and other facilities that treat primarily domestic wastewater are derived from the secondary treatment standards. There are two general approaches for developing technology based limits for industrial facilities: 1) using the national effluent limitation guidelines (ELGs) or 2) using best professional judgment (BPJ) in the absence of ELGs.

Publicly owned treatment works (POTWs) and private facilities that receive, treat and discharge primarily domestic wastewater (see definition at 10 CSR 20-2.010(23)) are required to provide a minimum of secondary treatment or its equivalent. The secondary treatment requirements address the pollutant parameters of BOD₅, total suspended solids and pH. The requirements allow the substitution of CBOD for BOD when nitrification is occurring in the treatment process. Bacteriological (presently fecal coliform) limits are very frequently associated with the three secondary treatment pollutant parameters. Secondary treatment and equivalent treatment are described in Permits Manual topics 5.3.2.1 and 5.3.2.2, respectively. Additionally, the Effluent Regulations, 10 CSR 20-7.015, present domestic wastewater effluent limits for all waters in the state based upon, or reflective of, the secondary treatment standards. Specifically, these limits are in 10 CSR 20-7.015(2), (3), (4), (6) and (8).

Other effluent limits may be placed in a permit for a facility receiving primarily domestic waste.

Ammonia, or ammonia nitrogen, is frequently included when necessary to protect the receiving stream for the propagation of aquatic life. Pollutant parameters, including toxic substances, associated with industrial wastes treated in the facility are often needed. Such limits are

developed based upon information received in the permit application, monitoring and inspection reports and from other sources. The limits placed into the draft permit are based on the best professional judgment of the permit writer.

For industries, the national ELGs represent the demonstrated performance of a reasonable level of treatment that is within the economic means of the category of industrial facilities. The ELGs, also known as the categorical standards, are presented in the Code of Federal Regulations at 40 CFR 400 through 471. BPJ limits are technology-based limits derived on a case-by-case basis for industrial facilities when ELGs are not available for a particular pollutant of concern. Permits Manual topics 4.7.4.1.2, 4.7.4.2.2 and 4.7.4.3.2 dealing with Industrial Permits and 5.3.3 Best Professional Judgment should be reviewed for additional information about industrial permits. 10 CSR 20-7.015(9)(G)1 addresses the setting of industrial permit limitations.

Permit writers must consider the impact of the discharge on the receiving water. It may be that a technology-based limit will not sufficiently protect the receiving stream's designated uses. In which case, the development of more stringent water quality based effluent limits (WQBELs) are necessary to ensure that water quality standards are met. In deciding whether WQBELs are needed, a permit writer must determine whether the discharge causes, has the reasonable potential to cause or contributes to a violation of water quality criteria. The permit writer must make this determination at each permit issuance or renewal and must develop WQBELs as necessary. The topics under Permits Manual section 5.4 Water Quality-Based Effluent Limits should be reviewed for further background on this subject.

Legal References:

Missouri Clean Water Law, Chapter 644

- [644.026.1\(13\), \(15\) and \(17\)](#) Powers and duties of commission--rules, procedure, review, generally, this chapter.
- [644.051.3](#) Prohibited acts--permits required, when, fee--bond required of permit holders, when--permit application procedures--rulemaking--limitation on use of permit fee moneys.

Code of State Regulations:

- [10 CSR 20-6.010\(5\)\(A\) and \(E\)](#) Construction and Operating Permits - Operating Permits
(A)Required
(E)Effluent Limits Required
- [10 CSR 20-6.010\(7\)](#) Construction and Operating Permits - Schedules of Compliance
- [10 CSR 20-6.010\(8\)\(A\)1& 2 and \(8\)\(B\)](#) Construction and Operating Permits - Permit Terms and Conditions
(A)Standard Conditions
(B)Effluent Limits, Monitoring and other Conditions
- [10 CSR 20-7.015](#) Effluent Regulations

Code of Federal Regulations

- [40 CFR 122.44 and 44\(d\)\(1\)](#) EPA Administered Programs: The NPDES - Establishing limitations, standards, and other permit conditions
- [40 CFR 122.45](#) EPA Administered Programs: The NPDES - Establishing limitations, standards, and other permit conditions - Calculating NPDES permit conditions
- [40 CFR 125.3](#) Criteria and Standards for the NPDES - Technology-based treatment requirements in permits
- [40 CFR 133](#) Secondary Treatment Regulation
- [40 CFR 400-471](#) Categorical Industrial Effluent Standards

Other Links:

[U.S EPA NPDES Permit Writers' Manual](#), (especially Chapters 5 and 6)

[2.3.3 Storm Water Sources](#) (all topics)

[4.7.4 Technical Review](#) (topics dealing with industrial, municipal, domestic, MS4 and CAFO facilities)

[5.3. Technology-Based Effluent Limits](#) (all topics)

[5.4 Water Quality-Based Effluent Limits](#)

[5.4.5 Effluent Limits for Specific Waters](#)

[7.2 Storm Water Discharges Associated with Industrial Facilities](#)

Key Words:

Effluent limits, final effluent limits, site-specific permits

Page ID: 3.2.7.2 Final Effluent Limits

Revised By: John Hoke and Jim Penfold

Modification Date: 10/05/2005