



Clean Water Act Section 403

A Framework For Ecological Risk Assessment

Background

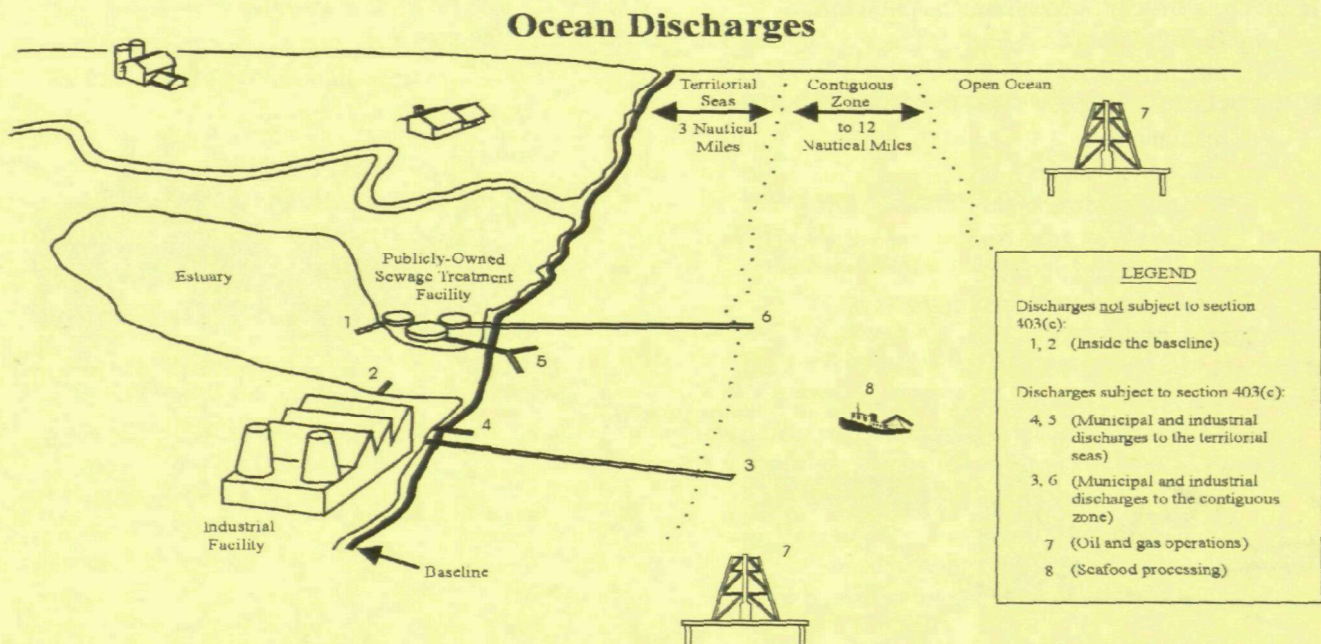
In 1972, Congress passed the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA). Under the CWA, point source discharges (i.e., discharges from municipal and industrial facilities) to waters of the United States must obtain a National Pollutant Discharge Elimination System (NPDES) permit, which requires compliance with technology- and water quality-based treatment standards. In addition, because of the complexity and ecological significance of marine ecosystems, discharges to the territorial seas and beyond must also comply with section 403 of the CWA, which specifically addresses impacts from such point sources on marine resources. The section 403 program was one of the first of EPA's programs to incorporate ecological risk assessment as part of the evaluation of the impacts of point source discharges on the marine environment.

Section 403 Requirements

Section 403 of the CWA provides that point source discharges to the territorial seas, contiguous zone, and oceans are subject to regulatory requirements in addition

to the technology- or water quality-based requirements applicable to typical discharges. The section 403 requirements are intended to ensure that no unreasonable degradation of the marine environment will occur as a result of the discharge and to ensure that sensitive ecological communities are protected. These requirements can include ambient monitoring programs designed to determine degradation of marine waters, alternative assessments designed to further evaluate the consequences of various disposal options, and pollution prevention techniques designed to further reduce the quantities of pollutants requiring disposal and thereby reduce the potential for harm to the marine environment. If section 403 requirements for protection of the ecological health of marine waters are not met, an NPDES permit will not be issued.

In assessing the potential effects of a marine discharge during permit application review, the permitting authority evaluates the impact of a marine discharge on the biological community based on ecological, social, and economic factors. Under the provisions of section 403, the permitting authority can require the permit applicant to provide the information necessary to conduct such an evaluation.



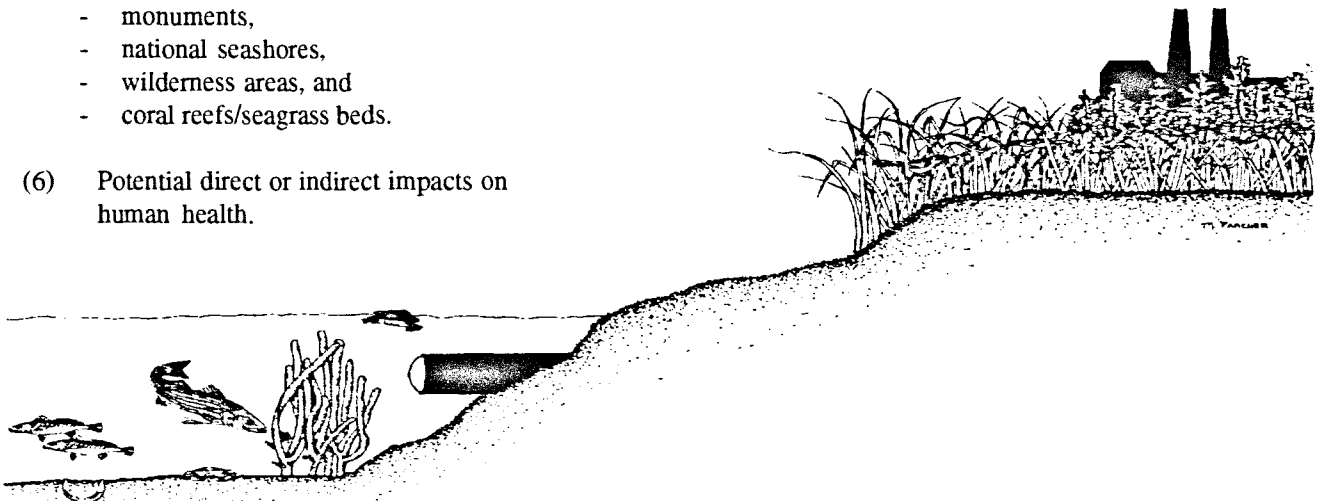
Ocean Discharge Guidelines

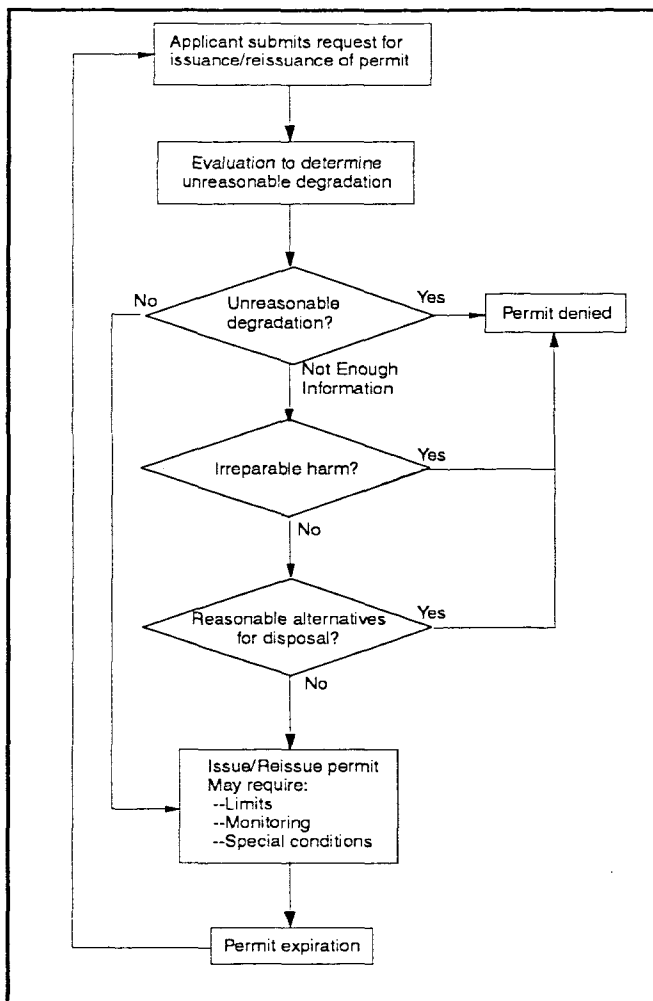
To implement section 403, EPA developed the Ocean Discharge Guidelines (40 *CFR* Part 125, Subpart M [45 *FR* 65942, October 3, 1980]), which specify the ecological, social, and economic factors to be used by permit writers when they evaluate the impact of a discharge on the marine environment. The 10 ocean discharge guidelines to be considered in determining whether unreasonable degradation of the marine environment will occur are as follows:

- (1) Quantities, composition, and potential bioaccumulation or persistence of the pollutants to be discharged.
- (2) Potential transport of the pollutants by biological, physical, or chemical processes.
- (3) Composition and vulnerability of potentially exposed biological communities, including
 - unique species or communities,
 - endangered or threatened species, and
 - species critical to the structure or function of the ecosystem.
- (4) Importance of the receiving water area to the surrounding biological community, e.g.,
 - spawning sites,
 - nursery/forage areas,
 - migratory pathways, and
 - areas necessary for critical life stages/ functions of an organism.
- (5) The existence of special aquatic sites, including (but not limited to)
 - marine sanctuaries/refuges,
 - parks,
 - monuments,
 - national seashores,
 - wilderness areas, and
 - coral reefs/seagrass beds.
- (6) Potential direct or indirect impacts on human health.
- (7) Existing or potential recreational and commercial fishing.
- (8) Any applicable requirements of an approved Coastal Zone Management Plan (CZMP).
- (9) Such other factors relating to the effects of the discharge as may be appropriate.
- (10) Marine water quality criteria.

Much of the information necessary to make these evaluations is usually already available to the permitting authority from previous scientific studies, permit evaluations, or other data collection activities. Additional information may be requested from the applicant when necessary to help the permit writer make decisions regarding the permit.

In those cases where there is insufficient information to support a finding of "no unreasonable degradation," applicants must demonstrate that the discharge will not cause "irreparable harm." When the permitting authority makes a determination of no irreparable harm, a permit may be issued while confirmatory data on ecosystem health are gathered to be evaluated prior to reissuance of the permit. These data are collected as part of a monitoring program to assess the impact of the discharge on water, sediment, and biological quality, as well as an assessment of alternative sites for the discharge or disposal of the wastewater. Data are also gathered through monitoring compliance with all other conditions in the permit.





Section 403 decision process.

EPA has identified more than 300 facilities subject to section 403 requirements under individual permits. Approximately 2,500 oil and gas exploration and production platforms must also meet section 403 requirements. These facilities are covered in five general permits in Alaska and the Gulf of Mexico. One general permit issued in Alaska covers approximately 300 seafood processing facilities, including both land-based facilities and seagoing vessels.

The 403 Universe: Types of Permitted Discharges (1994)

Category	Approximate Number
POTWs	130
Offshore Oil and Gas Facilities	2,500
Seafood Processors	300
Offshore Placer Mining	2
Log Transfer Facilities	35
Seawater Treatment Plants	3
Sugar Cane Mills	8
Petroleum Refineries	3
Pulp and Paper Mills	2

403 Authority

Statutory Authority: Section 403 of the Clean Water Act (33 U.S.C. Section 1343).

Regulatory Authority: Ocean Discharge Criteria — Title 40, Part 125, Subpart M, *Code of Federal Regulations* (40 CFR 125.120-125.124).

Regulated Community: Point sources (i.e., industrial and municipal facilities) discharging seaward of the baseline of the territorial sea.

Key Section 403 Definitions

Unreasonable Degradation

- Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities;
- Threat to human health through direct exposure to pollution or through consumption of exposed aquatic organisms; or
- Unreasonable loss of aesthetic, recreational, scientific, or economic value in relation to the benefit derived from the discharge.

Irreparable Harm

- Significant undesirable effects that are irreversible after cessation or modification of the discharge.

Baseline

- Defines the innermost boundary of the territorial seas; generally, the mean low water mark.

Ecological Risk Assessment and the 403 Process

As described by EPA in its *Framework for Ecological Risk Assessment* (1992), *ecological risk assessment* is the evaluation of the likelihood that adverse ecological effects might occur as a result of exposure to one or more environmental stressors. An environmental stressor is any physical, chemical, or biological factor that can cause an adverse environmental effect. Common environmental stressors include pollutants such as pesticides and organic chemicals, loss or

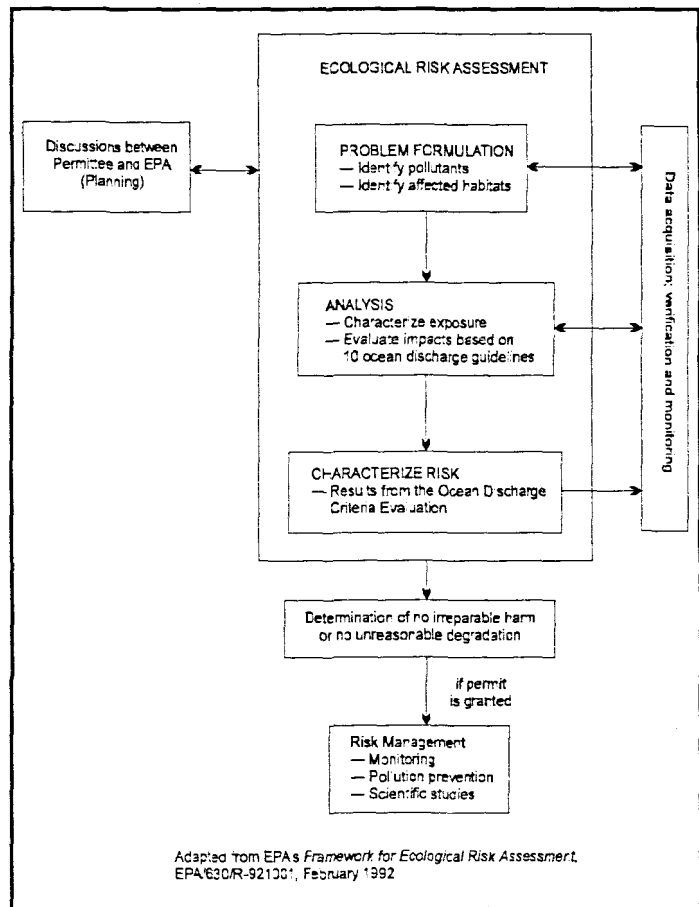
alteration of habitat, and sudden or extreme changes in temperature. Ecological effects commonly evaluated include mortality and reproductive or developmental abnormalities in fish, marine mammals, and other marine organisms; the types and magnitude of those effects; and the likelihood of recovery. Ecological risk assessment also involves evaluating ecological sustainability. Ecological sustainability entails balancing ecological risks with socioeconomic factors to determine an acceptable level of health and quality of an ecological system.

Under the National Pollutant Discharge Elimination System (NPDES) program, dischargers must achieve compliance with national minimum technology-based treatment requirements and any additional requirements necessary to meet state water quality standards. This approach helps to ensure that the designated uses of the receiving waters (e.g., fishable, swimmable) are not impaired. Section 403 can be used to require an evaluation of ocean discharges that looks beyond potential for water quality degradation. Specifically, section 403 provides for evaluation of the ecological risks and impacts associated with the discharge. The 10 guidelines listed earlier incorporate not only water quality impacts, but also impacts on the biological community and human health.

To assess potential impacts posed by a discharge, site-specific determinations of the magnitude of potential ecological risks are made. For example, a discharge might not cause long-term water quality degradation, but it might contain levels of contaminants that are harmful to marine organisms or entire marine communities in the vicinity of the discharge, especially benthic (bottom) communities, such as coral habitat, seagrass meadows, or shellfish beds. These communities are important individually and also make up part of the entire ecosystem, which directly or indirectly affects human health, (e.g., fish consumption, human contact, etc.). By measuring and evaluating ecological health—in this case, marine plant and animal life—we can better understand the risks and impacts pollutants pose to human health and welfare and make informed permitting decisions.

Our natural resources are not unlimited. The use of natural resources carries with it an obligation to protect those resources for the future. The purpose of ecological risk assessment is to gain an improved understanding of the magnitude and likelihood of adverse environmental responses to human activities so we can make informed decisions based on the best scientific data and knowledge. Ecological risk assessment, however, does not preclude human activity in the environment. Rather, when

appropriately carried out, it should be used to identify situations where ecological sustainability is threatened. EPA is committed to improving its decision-making capabilities by using ecological risk assessment technologies, such as section 403 Ocean Discharge Criteria Evaluations to protect both human and ecological health to the greatest extent possible.



EPA's framework for ecological risk assessment, modified to incorporate the steps for evaluating an ocean discharge.

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