

wells that have caused or may cause movement of contaminants into USDWs in specific areas of Florida (65 FR 42234). Continued injection would be allowed only if owners or operators meet certain requirements that provide adequate protection for USDWs. In the alternative, if new requirements are not promulgated, owners and/or operators of wells targeted by the proposal would be required to close their wells and adopt different wastewater disposal practices, which could consist of surface water disposal, ocean outfall, and/or reuse. Use of these alternative disposal practices would likely require the construction of systems for advanced wastewater treatment, nutrient removal, and high-level disinfection.

The preamble to the proposed rule describes in detail the history of domestic wastewater injection in Florida, the features of Florida geology that have allowed some of that injected wastewater to enter USDWs, and the two major (as well as subsidiary) regulatory options EPA proposed to address this issue in a manner that would permit continued injection that would not endanger USDWs. EPA received approximately 1,200 comments on the proposal (the comment period closed on October 22, 2000). The Agency will address these comments, along with comments received in response to the related notice published separately in today's **Federal Register**, as part of the final determination on this rulemaking.

C. Relative Risk Assessment of Management Options for Treated Municipal Wastewater in South Florida

As part of EPA's Fiscal Year 2000 Appropriations bill, Congress included the following provision: "Within available funds, the conferees direct EPA to conduct a relative risk assessment of deep well injection, ocean disposal, surface discharge, and aquifer recharge of treated effluent in South Florida, in close cooperation with the Florida Department of Environmental Protection [DEP] and South Florida municipal water utilities." Because this directive came at a time when EPA's work on the July 7, 2000, proposal was substantially complete, the Agency decided to proceed with the proposal and the relative risk assessment along separate but converging paths. First, EPA published and sought comment on the proposal based on information available at that time. Second, EPA initiated and conducted the relative risk assessment with the intent of using relevant findings to inform the final rulemaking.

EPA started the relative risk assessment by working with stakeholders to develop an appropriate methodology. The Agency first outlined a proposed methodology following standard risk assessment principles and guidance, such as the "Guide for Developing Conceptual Models for Ecological Risk Assessments."¹ EPA then held a stakeholders meeting on March 20, 2001, in Tallahassee, Florida to discuss the proposed methodology. The meeting was attended by 17 stakeholders representing municipal water utilities, regulators, and community and environmental groups. Participants offered comments on the proposed methodology, which EPA revised accordingly.

The methodology involved a process for investigating the four very different wastewater disposal options: deep well injection, aquifer recharge, discharge to ocean outfalls, and discharge to other (non-ocean) surface water bodies. Each option has its own specific stressors (hazards), exposure pathways, receptors, and effects. Parameters that are relevant to one particular disposal option are not necessarily relevant to the remaining three. Therefore, a strictly quantitative comparison between the four options was not possible.

Instead, EPA conducted what is termed a relative risk assessment to assess the risks and allow comparisons. Individual risk assessments were completed for each wastewater disposal option and the risks associated with each were characterized. The risks and risk factors identified for each wastewater management option were then evaluated and described. The overall comparisons and conclusions were then presented as relative risk assessment matrices.

The steps involved in the relative risk assessment included developing a Generic Risk Analysis Framework followed by conducting analyses of option-specific conceptual models. Data from many sources were used to support the analyses. These sources include the Florida Department of Environmental Protection, utilities (and the South Florida Water Environment Utility Council), and municipalities in South Florida. EPA also worked with a panel of experts both inside and outside of EPA and representing a variety of fields to review and incorporate data and information acquired through comprehensive searches of the relevant scientific research literature. Risk

characterization for each option included identifying and describing the associated risks, their potential magnitude, and the potential effects on human and ecological health. The relative risk assessment then described and compared risks for all four wastewater management options. Finally, the relative risk assessment was peer reviewed in accordance with the Agency's Peer Review Handbook.

Section III summarizes the major findings of the relative risk assessment, which has been finalized. In a separate notice of data availability published elsewhere in today's **Federal Register**, EPA requests comment on how the relative risk assessment should inform the final rulemaking on deep municipal injection wells in Florida.

III. Findings of the Relative Risk Assessment

The relative risk assessment offers comparisons of deep well injection, ocean disposal, surface discharge, and aquifer recharge of treated municipal wastewater in South Florida by considering several factors important for determining risk. This section highlights how the report addresses the following questions: (A) What level of treatment and disinfection is provided? (B) What stressors remain (after treatment) that may be a concern? (C) What exposure pathways are (or may be) of significance? (D) What is the overall estimate of risk? (E) What are the important data or knowledge gaps? The purpose of this summary, the publication of the report, and this notice of availability is to discharge fully EPA's responsibility to complete the relative risk assessment mandated by Congress.

A. What Level of Treatment and Disinfection Is Provided?

Municipal wastewater managed by any of the four options studied in South Florida receives secondary treatment, at a minimum. Secondary treatment comprises biological removal of dissolved organic and inorganic matter, commonly through such methods as activated sludge and trickling filter processes. By itself, secondary treatment does not provide disinfection, *i.e.*, removal of microorganisms.

1. Deep Well Injection

All facilities that manage municipal wastewater by deep well injection in Florida are required by Florida law to provide at least secondary treatment of the wastewater prior to injection. In addition, utilities that employ deep well injection must maintain disinfection capability, but many do not disinfect treated effluent prior to injection. For

¹ Prepared by G.W. Suter II of Oak Ridge National Laboratory for the U.S. Department of Energy. Report No. ES/ER/TM-186 issued in May 1996. Available at <http://www.esd.ornl.gov/programs/ecorisk/tm186.pdf>.