

for manure application in the United States.

USDA's analysis also indicates which counties have the potential for excess manure nutrients defined as manure nutrients produced in a county in excess of the assimilative capacity of crop and pastureland in that county. (The analysis includes counties that have nutrient levels that exceed the assimilative capacity for all of the crop and pastureland in the county, as well as those counties where half of the county's total nitrogen or phosphorus could be provided by manure from confined animal operations.) The counties with potential excess manure nitrogen totaled 165 counties across the United States in 1997; the counties with potential excess manure phosphorus totaled 374 counties. The areas of particular concern for potential county-level excess manure nutrients are in North Carolina, Georgia, Alabama, Mississippi, Arkansas, California, Maryland, Delaware, Pennsylvania, Virginia, and Washington. If current trends in the livestock and poultry industry continue, more manure will be produced in areas without the physical capacity to agronomically use all the nutrients contained in that manure.

USDA's analysis is reported in "Confined Animal Production and Manure Nutrients" (Agriculture Information Bulletin 771) and also in "Confined Animal Production Poses Manure Management Problems" in the September 2001 issue of USDA's *Agricultural Outlook*. Both are available at USDA's Web site at <http://www.ers.usda.gov/>. Additional documentation on how this analysis was conducted is in USDA's "Manure Nutrients Relative to the Capacity of Cropland and Pastureland to Assimilate Nutrients: Spatial and Temporal Trends for the United States," December 2000, available at <http://www.nhq.nrcs.usda.gov/land/pubs/manntnr.html>. These documents are also available in the administrative record for today's final rule (*i.e.* docket number W-00-27).

### 3. What Pollutants Are Present in Animal Manure and Wastewater?

Pollutants most commonly associated with animal waste include nutrients (including ammonia), organic matter, solids, pathogens, and odorous compounds. Animal waste can also be a source of salts and various trace elements (including metals), as well as pesticides, antibiotics, and hormones. These pollutants can be released into the environment through discharge or runoff if manure and wastewater are not properly handled and managed.

### 4. How Do These Pollutants Reach Surface Water?

Pollutants in animal waste and manure can enter the environment through a number of pathways. These include surface runoff and erosion, overflows from lagoons, spills and other dry-weather discharges, leaching into soil and ground water, and volatilization of compounds (*e.g.*, ammonia) and subsequent redeposition on the landscape. As documented in the administrative record, pollutants from animal manure and wastewater can be released from an operation's animal confinement area, treatment and storage lagoons, and manure stockpiles, and from cropland where manure is often land-applied.

### 5. How Is Water Quality Impaired by Animal Manure and Wastewater?

Agricultural operations, including CAFOs, now account for a significant share of the remaining water pollution problems in the United States, as reported in the *National Water Quality Inventory: 2000 Report* (hereafter the "2000 Inventory"). This report, prepared every 2 years under Section 305(b) of the Clean Water Act, summarizes States' reports of impairment to their water bodies and the suspected sources of those impairments. A more comprehensive discussion of the results of the 2000 Inventory is included in Section VII of this preamble.

EPA's 2000 Inventory data indicate that the agricultural sector including crop production, pasture and range grazing, concentrated and confined animal feeding operations, and aquaculture is the leading contributor of pollutants to identified water quality impairments in the Nation's rivers and streams. This sector is also the leading contributor in the nation's lakes, ponds, and reservoirs. Agriculture is also identified as the fifth leading contributor to identified water quality impairments in the nation's estuaries. The inventory does not allow a comprehensive breakout of water quality impairments attributable to CAFOs, but EPA's data show that water quality concerns tend to be greatest in regions where crops are intensively cultivated and where livestock operations are concentrated.

The leading pollutants impairing surface water quality in the United States as identified in the 2000 survey data include nutrients, pathogens, sediment/siltation, and oxygen depleting substances. These pollutants can originate from a variety of sources, including the animal production industry.

The 2000 Inventory provides a general indication of national surface water quality. While concerns have sometimes been raised about the comparability and consistency of these data across States, the report highlights in a general way the magnitude of water quality impairment from agriculture and the relative contribution compared to other sources. Moreover, the findings of this report are consistent with other reports and studies conducted by government and independent researchers that identify CAFOs as an important contributor of surface water pollution, as summarized in the administrative record for this rulemaking.

### 6. What Ecological and Human Health Impacts Have Been Caused by CAFO Manure and Wastewater?

Among the reported environmental problems associated with animal manure are surface water (*e.g.*, lakes, streams, rivers, and reservoirs) and ground water quality degradation, adverse effects on estuarine water quality and resources in coastal areas and effects on soil and air quality. The scientific literature, which spans more than 30 years, documents how this degradation can contribute to increased risk to aquatic and wildlife ecosystems; an example is the large number of fish kills in recent years. Human and livestock animal health can also be affected by excessive nitrate levels in drinking water and exposure to waterborne human pathogens and other pollutants in manure. The administrative record provides more detailed information on the scientific and technical research to support these findings.

Section VII of this document provides additional information concerning the adverse impacts of pollutants associated with manure in surface water. Both ecological and human health impacts are addressed.

### D. What Are the Roles of the Key Entities Involved in the Final Rule?

EPA recognizes the role of many interested parties in the development of and, ultimately, the successful implementation of this final rule. To the greatest extent possible, EPA has attempted to strike a reasonable balance among the many interests. A short summary of their broad roles is provided below.

#### 1. CAFOs

Entities that are defined or designated as CAFOs have clear and binding legal obligations under this regulation. In general, all CAFOs have a mandatory duty to apply for an NPDES permit and