

STATEMENT
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BEFORE
UNITED STATES SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

September 6, 2007

Madam Chairman and Committee members, I appreciate the opportunity to appear before the Committee on Environment and Public Works to testify on the findings of U.S. Geological Survey (USGS) studies of water-quality issues related to Concentrated Animal Feeding Operations, commonly referred to as CAFOs.

As you may know, the mission of the USGS is to assess the quantity and the quality of the earth's resources and to provide information to assist resource managers and policy makers at the Federal, State, and local levels in making sound decisions. Assessment of water-quality conditions and research on the fate and transport of pollutants in water are important parts of the overall USGS mission.

USGS studies over the past 10 years have shown that CAFO impacts can include a wide variety of contaminants in many different environmental settings. The USGS and other organizations have investigated impacts from CAFOs that include the following: nutrients and their proximity to receiving waters that could cause hypoxia, harmful algal blooms, or contaminate drinking water sources; trace elements such as arsenic and copper that can contaminate surface waters and affect fish and aquatic plants; pathogens such as bacteria, viruses, and parasites; antibiotics that could foster the development of antibiotic-resistant pathogens; pesticides and hormones that can influence changes in fish reproductive capability; and solids from feed and feathers that could limit growth of desirable aquatic plants.

USGS research has centered on five major areas of investigation which are designed to track contaminants from their sources, through the environment, and to animal and human receptors: 1) analytical method development, 2) occurrence and relative source contributions of specific chemical and microbial contaminants and their mixtures, 3) pathways into and through the environment, 4) source fingerprinting, and 5) ecological effects. These areas of research are designed to provide scientific insights into potential public and ecological health impacts as well as provide management and policy decision makers with CAFO related information.

Analytical Method Development:

The first step in assessing potential environmental contamination from CAFOs is to anticipate and identify chemicals and microbes that are likely to be associated with CAFO wastes and effluents. USGS scientists continually develop new methods for identifying and quantifying veterinary medicines, naturally occurring hormones, pathogens, surfactants, and other

The USGS has found CAFOs to be a source of nutrient, pharmaceutical, and metal contaminants in nearby waters and lands receiving wastes. Additional research is needed to determine the relative source contributions and environmental behavior of contaminants originating from a range of animal and land-use operations to make scientifically credible management and policy decisions specific to CAFOs. Identification of sources and movement of waste contaminants requires more research on degradation and metabolic products from the many compounds used in animal agriculture, especially pharmaceuticals in various feed mixtures, therapies, and environmental settings. Some potential ecological effects have been hypothesized and are currently under investigation, including the role of CAFOs in eutrophication of receiving waters, wildlife exposure to pathogens and endocrine disruptors, and development of antibiotic resistance.

I appreciate the opportunity to testify on the results of USGS assessments and research on CAFOs. I am happy to respond to any questions from the Committee.

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**TESTIMONY OF BENJAMIN H. GRUMBLES
ASSISTANT ADMINISTRATOR FOR WATER
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
U.S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS**

September 6, 2007

I. Introduction

Madame Chairman and Members of the Committee, I am Benjamin H. Grumbles, Assistant Administrator for Water at the United States Environmental Protection Agency (EPA). Thank you for the opportunity to discuss EPA's programs and actions to protect water quality and public health from potential adverse effects of concentrated animal feeding operations (CAFOs). We are taking important actions, on many fronts with many partners, to accelerate the pace of environmental protection, while maintaining our country's economic and agricultural competitiveness.

II. Human health, water quality and other effects of the concentrated animal feeding operation industry

Nationally, there are an estimated 1.3 million farms with livestock. About 238,000 of these farms are considered animal feeding operations (AFOs) – agriculture enterprises where animals are kept and raised in confinement. Feed is brought to the animals rather than the animals grazing or otherwise seeking feed in pastures. AFOs annually produce more than 500 million tons of animal manure. If properly managed, these operations may minimize environmental impacts and provide valuable by-products; however, if improperly managed, the manure from these operations can pose substantial risks to the environment and public health.

Animal Feeding Operations (AFOs) are operations where animals are kept and raised in confined situations for at least 45 days/year and vegetation is not present in the confined area (to distinguish it from grazing operations). An operation must meet the definition of an AFO before it can be defined or designated as a concentrated animal feeding operation (CAFO). CAFOs are further defined as a large or medium CAFOs based primarily upon the number and type of animals confined at the operation. Additionally, an AFO that does not meet either of these definitions may be "designated" as a Small CAFO if it is determined to be a significant contributor of pollutants to waters of the US.

An ongoing trend toward fewer but larger farm operations, together with greater emphasis on intensive production methods, increases environmental and public health risks by concentrating more manure nutrients and other animal waste impacts within smaller geographic areas. In addition, many large operations do not have sufficient land to effectively use the manure they generate as fertilizer. Animal waste and wastewater can enter waterbodies from spills or breaks of waste storage structures (due to accidents or excessive rain), and over-application of manure to crop land.

Despite substantial improvements in the nation's water quality since the inception of the Clean Water Act, many of the Nation's assessed waters show impairments from a wide range of sources. Improper management of manure from CAFOs is among the many contributors to remaining water quality problems. EPA's 2002 National Assessment Database summarizes State water quality reports (Section 305(b) reports) and categorizes the quality of the state's assessed waters as good, threatened, or impaired. For the 2002 reporting cycle, States assessed 19% of river and stream miles and 37% of lake, pond, and reservoir acres nationwide. Of the waters assessed by States, those States identified 45% of the assessed miles of rivers and streams as impaired; agriculture, hydromodification¹, and habitat alterations are the leading identified sources, in that order. States identified 47% of assessed acres of lakes, ponds, and reservoirs as impaired and identified agriculture, atmospheric deposition, land application/waste sites, and hydromodification as the leading sources.

Improperly managed manure has caused acute and chronic water quality problems and is a significant component of waterbody impairments. Manure and wastewater from CAFOs can contribute pollutants such as excessive amounts of nitrogen and phosphorus, organic matter, sediments, pathogens, heavy metals, hormones, and antibiotics to the environment. Excess nutrients (i.e., nitrogen and phosphorus) in water can result in or contribute to low levels of dissolved oxygen (anoxia), eutrophication, and toxic algal blooms.

These conditions may be harmful to human health and have been associated with algal blooms. Decomposing organic matter (i.e., animal waste) can reduce oxygen levels and cause fish kills. Pathogens discharged into waterways have also been linked to threats to human health. Pathogens in manure can also create a food safety concern if manure is applied directly to crops at inappropriate

¹ Alteration of the hydrologic characteristics of a water body, such as channelization or water diversions