Izaak Walton League of America
Agricultural Programs
Fish Kill Advisory Network

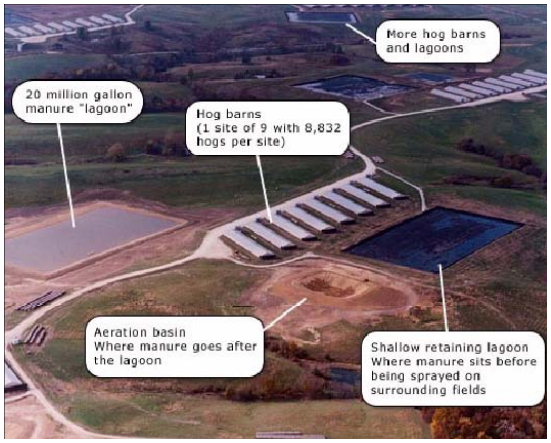
Fish kills are not only the consequence of water pollution, but they are an important indicator of water quality and ecosystem health. Some causes of fish kills include agricultural runoff, transportation related accidents, and even natural processes. Fish kill data educates the public on water quality problems and the threat they pose to our environment, health and natural resources. FKAN works to increase the reporting and investigation of fish kills, strengthen state enforcement efforts, and encourage water quality improvement.

Factory farms, otherwise known as concentrated animal feeding operations (CAFO), are major factors in our FKAN data. Animal agriculture is an important option for communities, but it must be managed with conservation and stewardship in mind.

Concentrated animal feedlots create large amounts of animal waste that often exceeds the nearby land's ability to process the waste. More effective manure management plans are necessary to protect the soil, water and air near these large feedlots.

However, manure spills are not the only cause for fish kills. In Minnesota many metro area kills are caused by "natural" sources: disease, parasites or low dissolved oxygen levels that are exacerbated by urban pollution.

This picture illustrates the effects of manure spills and other events that cause fish mortalities as well as harm to waterways. If fish kill or manure spill events recur regularly in an area, eventually there will be no fish left to kill.



The picture highlights typical elements at a concentrated animal feedlot operation. Large lagoons are used at many CAFOs for storing the manure from thousands of animals. This manure is mostly untreated and then land applied.

For more information about animal agriculture, fish kills, manure spills or geographical information systems, please contact Anne Wiegand at awiegand@iwla.org or 651.649.1446.

Geographical Information Systems Background

Types of Events Collected:

The Fish Kill Advisory Network collects information on fish kills from all sources, including “natural” kills from low dissolved oxygen or other naturally-occurring poor water quality incidents, as well as human caused kills from chemical pollution or agricultural spills. FKAN also collects information pertaining to spills that involve manure. Often this can be from field runoffs, manure leaking into tile lines and then into streams, or from lagoon failures and transport accidents. While we do collect individual records from concerned citizens, events must be state verified in order to be credible.

Thus the events in the database can be a fish kill, manure spill or a fish kill caused by a manure spill. The database specifies the type of events and records are mainly from 1980 to the present. There can be a half a year time lag due to state reporting methods.

Data Fields in the FKAN Database:

State abbreviation, Primary county name, secondary county name, general incident date, primary key (unique for each record), month, year, named waterbody, type of waterbody, secondary waterbody, type of the secondary waterbody, impact (in miles), impact (in acres), fish kill (yes or no), number of fish killed, types of fish killed, resource damages (dollar amount), agency expenses (dollar amount), fines or penalties (dollar amount), specific facility causing the spill, operator, number of head (animals), owner of animals, pollutant, type of animal, volume of the pollutant (gallons), volume of the pollutant (pounds), general source type, source action, source comments (general field for text), location (city), narrative on location (township, range, roads, etc), primary source, type of primary source, secondary source, type of secondary source, start date of the fish kill, end date of the fish kill, start date of spill, end date of the spill, notification date, investigation date, on-going investigation (yes or no), repeat offender (yes or no), enforcement comments, date entered, entered by (initials of FKAN staff), overall comments.

Currently there are nearly 50 fields in the database that have been developed as the FKAN database has grown. Unfortunately, due to incomplete state records and the time lag for confidentiality in on-going investigations, many fields may be recorded as unknown.

Data Sources:

While the maps are made from the Fish Kill Advisory Network database (in Microsoft Access), the original source data is all found in state agency records.

In general there are three main sources of the data: the state regulatory agency, reports from states to the Congress and state natural resources agencies. These may take on different names or may be the same agency depending on the specific states. The specific source material is noted in each event in the overall comments field, as listed below.

Illinois:
Environmental Protection Agency and the Department of Natural Resources collect fish kill information and manure spill records. The EPA has been unable to provide regular updates and the DNR does not collect a record of all fish kills because they deem some to be naturally caused and therefore acceptable.

Iowa:
Iowa has a rigorous Department of Natural Resources that provides press releases on enforcement data as well as a separate web page that has a fish kill record database available for download.

Minnesota:
Data comes from both the Department of Natural Resources and Pollution Control Agency. Because of funding and confidentiality issues, the PCA has not been cooperative in sharing information since 2004. The DNR does provide a fish kill log but it may not include all manure spill information, as the PCA is the responsible government agency for feedlots.

Missouri:
Department of Conservation collects fish kills and manure spills and the Department of Natural Resources maintains enforcement data. The DNR has been unable to find staff time to provide information to FKAN since early 2005.

Wisconsin:
Department of Natural Resources has recently started a fish kill database and a separate manure spill database for events since 2004. FKAN staff is pleased with this new development, although information prior to 1988 remains difficult to procure.

Discussion of Error:

There are many sources of data weakness due to incomplete state records, inability to share state records and a dependency on state funding to maintain accurate records. Often conservation funding is the first to be cut in budgets. To see a more specific discussion of the error in the data, please see the discussion of each state data source above.