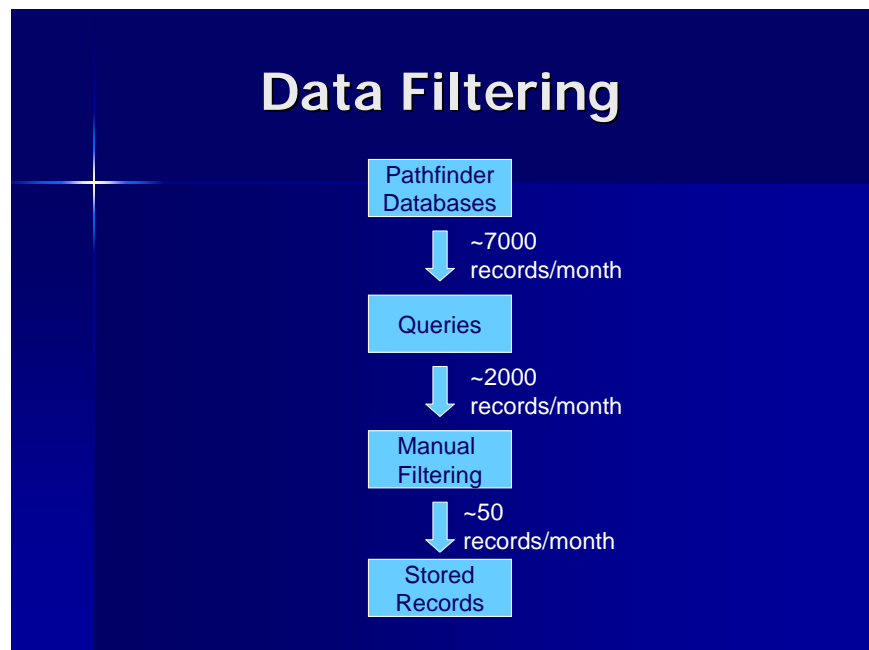# Pathfinder: A Tool for Electronic Surveillance
Written by Christine Kopral

The Centers for Epidemiology and Animal Health's Center for Emerging Issues (CEI) acts as Veterinary Services' (VS) "eyes and ears" outside the usual VS information channels. CEI examines the *external* environment to identify emerging events, which include events related to animal health as well as societal and industry trends. The CEI staff attempts to anticipate the impact of these events on animal and public health in the United States, and on VS' program objectives and operations. Electronic scanning of information is a primary component in identifying emerging issues. Pathfinder is one of the key scanning tools used by CEI for this purpose. Originally developed for use by the military community, this software filters and describes patterns in textual records.

The Internet is a valuable resource for identifying and tracking emerging disease situations. Managing the Internet as an information source, however, requires the application of technology, as it has become virtually impossible for individuals to read and track all the relevant information now available. Using Pathfinder technological tools, CEI analysts can simultaneously search, sort, compare, visualize, map, cluster, and perform "link analysis" on thousands of documents from many different sources. These capabilities allow analysts to use the Internet's vast information as an important source for emerging disease intelligence.

Pathfinder does not search the Web for information; rather, inputted data sources are chosen. Selected data sources include those that focus on current events, such as list servers, industry Web sites, and worldwide electronic newspapers. Through an automated process, electronic information from these sources is updated daily and is available for analysis. In 2004, CEI averaged about 7,000 new records per month.

In order to filter and reduce the information to manageable levels, CEI created four separate standing queries designed to find records containing information about specific animal diseases, disease situations in which a specific disease is not identified, and outbreaks of novel diseases. For example, one query is designed to find records with information that may indicate an animal disease outbreak of unknown or undiagnosed cause; thus, Pathfinder searches for words such as dead, dying, sick, ill,

Data Filtering

Pathfinder Databases
↓ ~7000 records/month
Queries
↓ ~2000 records/month
Manual Filtering
↓ ~50 records/month
Stored Records

outbreak, etc. Another query detects indications of the mobilization of government or non-

governmental organizations responding to outbreak situations by looking for words such as respond, slaughter, test, emergency, moratorium, and quarantine. A CEI analyst runs these queries several times a week and reviews, organizes, and tracks the records found to monitor emerging animal health issues and trends at both the national and international levels. This automatic filtering process reduces the approximately 7,000 records per month to about 2,000 records per month. Analysts then manually filter the remaining records; about 50 of the original 7,000 records are read and stored for future follow-up.

Pathfinder continues to be evaluated and refined. Electronic scanning tools will never replace human analysts who are still needed to determine the significance of an event. Pathfinder, however, does simplify the procedure and allows for the processing of much greater quantities of information. Of the more than 52,000 records CEI received from its sources from January through September 2003, Pathfinder queries pulled approximately 30 percent (15,500+) for further evaluation. Of these, CEI tagged 454 as significant. A handful of the 454 were of high concern to the United States.