breakout ABSTRACT

VISION to REALITY 2005

TITLE

Linking Data to Create Information for Public Health Practitioners: Fish Contaminants and Consumption Advisories

THEME

Disseminate Credible Information to Guide Policy, Practice and Other Actions to Improve the Nation's Health

KEYWORDS

fish contaminants, contamination, tissue, consumption, Exchange Network

BACKGROUND

The Office of Environmental Health Assessments at the Washington State Department of Health (DOH) has been involved in analyzing fish tissue contamination data from various state, federal and academic institutions, and using this information to produce a variety of messages regarding the consumption of sport-caught fish. As there was no formal program in DOH to carry out this function, the methods of data acquisition, analysis, interpretation and decision-making often varied depending on the type of information requested and the specific members of the team who were involved. As both the amount of fish tissue contamination data and public concern about the potential health problems from consuming contaminated fish increased, the need for a standardized protocol and outputs tailored to the needs of public health practitioners became apparent.

OBJECTIVE(S)

To develop a software application to facilitate the standardized retrieval, analysis, and interpretation of fish tissue contamination data to generate information for making recommendations and developing programs to deliver advice regarding healthy fish consumption.

METHOD(S)

To define the business uses for this application, a number of meetings were held with staff and stakeholders to discuss a standard protocol to be used for analyzing fish tissue data. An IT assessment process revealed that data were kept in spreadsheets on personal workstations, with no means for auditing the data cleaning or reduction activities. Further, there were no standardized data structures or variable definitions. Based on standardized protocol, a general work flow was used to develop specifications.

RESULT(S)

The software has been developed to retrieve fish tissue contamination data from the Department of Ecology's Exchange Network node. The most challenging development work was in accessing the desired fields and modifying them into a useful data structure. The software allows for data filtering and deletion with a retrievable audit trail. Non-detects can be set at zero, half the detection limit, the detection limit, or estimated from a distributional assumption.

Summary statistics from the analysis of the contamination data is then passed to a module which calculates the meal frequency which would put a person at the exposure level consistent with the reference dose or a cancer risk of a set level (10^{-4} to 10^{-6}). The meal frequencies are generated for a number of scenarios based on different fish species and sizes, contaminants, target populations, and health end-points.

Toxicological data were entered as metadata that can be modified as new information becomes available. Population characteristics, primarily body weights and meal size, were generated from existing data to form default target populations whose values can be changed.

The results are designed to be used as a basis of discussion from which fish consumption advice is generated, documented and saved in a database in a non-editable form. This database will be available via the internet. The software will be demonstrated as part of the presentation.

DISCUSSION/RECOMMENDATION(S)

This application is a working model of how data can be accessed real-time via the Exchange Network and linked with other data to generate information that is useful for public health practitioners and stakeholders. While the Exchange Network is designed to provide a consistent window into environmental data warehouses from many systems, the templates for different uses will need to be developed to adequately meet their data needs. As with most software development projects, defining use cases and business rules is not completed during the design phase; nuances of business rules appear as specific functions are laid out. Planning and iterative scoping sessions with users will help to minimize conflicts and overruns during the development of such applications.

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