

**RISK-BASED DECISION-MAKING GUIDELINES
(SECOND EDITION) SERIES OF ARTICLES:
DATA COMPENDIUM**

This article is the fifth in a series concerning the revised Risk-based Decision-making (RBDM) Guidelines. It contains information about the Data Sources Compendium.

A Discussion about the *Compendium of Data Sources* – a Resource Now Available with the Risk-based Decision-making Guidelines

(<http://www.uscg.mil/hq/g-m/risk/e-guidelines/html/index.htm>, then go to Volume 4 / General Resources)

The Art of Being Well Informed

Well-informed decision-makers have a greater probability for success and a higher degree of confidence in their choices compared to those who unwittingly leave some factors to chance. But how does one systematically become well informed? And how can one judge the quality of information they are using? And how does one balance the work of becoming informed with the need to make a timely decision? These are just some of the issues Coast Guard men and women will grapple with as we inch forward to achieving our capability goal of becoming competent in risk-based decision-making (RBDM).

Our initial progress may at times be more art than science, but considerable effort has gone into giving us a solid start on systematically identifying and accessing data for use in the various risk methodologies outlined in the RBDM Guidelines. Converting data into useful information will yield dividends in the long term.

Hidden Dangers of Converting Data into Information

Ironically, data in and of itself provides little benefit to decision-makers. Consider these simple examples. The

If:

- You need a quick start on a specific situation, but do not know where to begin
- You know what type of risk assessment to perform, but do not know what steps to follow
- You are investigating a particular accident
- You are reviewing a risk assessment performed by someone else
- You want to learn more about the basics of risk-based decision making
- You want to know more about risk assessment and risk management
- You want a broad overview of risk assessment tools
- You need help structuring your overall decision-making process

the Navigator has a plan to start you on your way.

National Weather Service collects hourly readings of atmospheric pressure at hundreds of sites across the country. Tabular listings of the data can be seen in newspapers or on the Internet. But the lists have little direct value. It is only when the data is analyzed together and charted that the data turns into predictive information for weather forecasting.

When we drive our cars, speed is a major indicator of our overall safety. But how many of us think of the sensors and instruments that are instantaneously collecting and processing data so we can

“see” an indication of our speed? What if instead we saw readouts of wheel rotations and time? Clearly there is a subtle difference between raw data and information. Information can be considered the summary analysis of data relevant to decision-making. But this is where some problems can be encountered. Users must understand what they are analyzing or they can interject errors or bias into the risk analysis methods and process.

Most of the Coast Guard’s information systems, and for that matter, the majority of public and private legacy systems, fall into the category of “transactional databases.” That is, they simply record aspects of events. These systems were designed for specific business processes. They rarely model total systems. For example, the Army’s Corps of Engineers collects data on waterborne commerce in the United States. Information on the drafts of vessels and types of cargoes entering and leaving specific ports can be obtained. This data is primarily used by the Army to justify funding requests for federal dredging projects. However, the publicly available data has become popular with analysts because it provides a partial indication of traffic on waterways. But the database only addresses commercial domestic and foreign vessels. It does not report on (and was not intended to report on) military, recreational, special use, or fisheries traffic. It also has peculiar and specific definitions. A six-barge “train” being pushed by a tug is treated as six transits of the waterway it is on. In reality, if one were counting waterway usage, we would likely count this as one trip. Using only the database would cause us to be off by five.

It is incumbent upon analysts using data from these systems to recognize the data’s intended use and what constraints must be applied to that data. Only then can

the data be analyzed and provided to decision-makers for use with the risk-based methodologies. To address these concerns and to focus the RBDM data sources effort to a logical starting point, we adopted an approach of identifying, categorizing, and cataloging data sources that would likely be used by analysts studying marine safety and environmental protection issues. We then had our selections reviewed by a team of external subject matter experts to confirm the data sources as useful and to uncover unusual facts associated with actually using their data.

The Concept of Metadata

Metadata can be defined as data about data. Data Dictionaries that describe database schemas and details of individual fields are one example of metadata. “Read Me” files that accompany software installation packages are another. Even web pages could be considered metadata. The primary goal of the Data Sources Compendium was to provide metadata on data sources related to marine safety and environmental protection in general. By employing the concept of metadata, the data sources project could leverage its limited resources to supply the greatest awareness of data availability and quality. While it is true metadata does not connect the user directly to the data source, information contained in the Compendium will direct the user on where to go or whom to contact to get data. More importantly it will help initial users to become conversant in how the data can properly be used in risk analysis.

What to Expect if One Chooses to Use the Compendium

Users of the RBDM Guidelines will find the *Compendium of Data Sources for Coast Guard Marine Safety and Environmental Protection Risk-Based Decision-Making* in the Resources Volume,

Volume 4 of the RBDM Guidelines. The Compendium consists of hundreds of pages of information. For that reason it is only provided electronically. However, that should not deter use or interest. The main body of the Compendium is only ten short pages of step-by-step instruction on how to begin selecting data sources for RBDM. The data selection steps are clear and concise and include explanatory examples. The steps guide the user to *Appendix A – Common Risk Parameters*. Appendix A compiles common risk parameters that appear in many Coast Guard directives and publications. The parameters have been divided into six general categories:

1. Cargo-related information
2. People and public safety-related information
3. Response-related information
4. Vessel and transit-related information
5. Port/waterway-related information
6. Environment-related information

Each category has a table (Tables A-1 through A-6) that lists specific risk parameters followed by recommended data sources. A primary source is identified for each parameter. The primary source should be used if at all possible. Many parameters also have one or more alternate sources. These sources may be considered for use if the primary one is determined inadequate during the data selection process. Table A-7 identifies the data source name and indicates whether additional information on that source is available in *Appendix C – Metadata*. Appendix C is the metadata with detailed information about the source and how to actually acquire your data sets. Appendix B is a risk-based approach to compiling the same data sources. It uses frequency and consequence as the major hierarchical structures in lieu of the Coast Guard parameters used in Appendix A.

Future Plans

While the Data Sources Compendium project has concluded, the topical area of data support for RBDM is ripe for further development. One could easily envision web pages with search engines, data-sharing sites similar to “Napster,” even the creation of new data specific to our needs. Much of future developments should come from end users. Who would know better what data is needed?

The compendium is a living document, subject to future revisions and developments. Currently, it provides only initial guidance and an overview of some probable data sources. Lessons learned from field personnel can help Commandant (G-MSE) improve the usefulness of the compendium. Comments should be forwarded directly to Commandant (G-MSE) at risk@comdt.uscg.mil.

The previous articles discussed the differences between the first and second editions, what RBDM is, the process used to select RBDM tools, and how to get started. The final article in this series will provide information on future plans.