

Compendium of Risk Assessment/Risk Management Resources

1. Regulations		
<i>U.S. Department of Defense - Safety and Occupational Health</i>	1.1	<p>DoDI 6055.1, <i>DoD Safety and Occupational Health (SOH) Program</i>, 19 August 1998.</p> <ul style="list-style-type: none"> · This document requires that the risk management process shall be institutionalized and be an inherent part of all military operations to address safety and occupational and environment health risks. · The risk management process consists of following steps: <ul style="list-style-type: none"> - Identify hazards. - Assess hazards to determine risks. - Develop controls and make risk decisions. - Implement controls. - Supervise and evaluate. · Document is available at: http://www.dtic.mil/whs/directives/corres/html/60551.htm.
<i>U.S. Air Force - Risk Management</i>	1.2	<p>Air Force Instruction (AFI) 90-901, <i>Operational Risk Management</i>, 1 April 2000.</p> <ul style="list-style-type: none"> · Establishes the requirement to integrate and sustain operational risk management (ORM) throughout the Air Force. Assigns responsibilities for program elements and contains program management information. · Document is available through: http://www.e-publishing.af.mil/pubs/publist.asp?puborg=AF&series=90
<i>U.S. Air Force - Risk Management</i>	1.3	<p>Air Force Pamphlet 90-902, <i>Operational Risk Management (ORM) Guidelines and Tools</i>, 14 December 2000.</p> <ul style="list-style-type: none"> · This pamphlet provides the definitions, guidelines, procedures and tools for the integration and execution of Operational Risk Management. · Document is available through: http://www.e-publishing.af.mil/pubs/publist.asp?puborg=AF&series=90

<p><i>U.S. Army - Materiel Health Hazard Assessment</i></p>	<p>1.4</p>	<p>AR 40-10, <i>Health Hazard Assessment Program in Support of the Army Materiel Acquisition Decision Process</i>, 1 October 1991</p> <ul style="list-style-type: none"> · Prescribes specific responsibilities of developers for health hazard assessments (HHAs) in support of the Army Materiel Acquisition Decision Process (MADP). · Describes the HHA program as an integrated effort, throughout the entire MADP. Specifically, it considers -- mission needs, concept analysis, research, development, testing, evaluation, production (in government facilities), procurement, training, use, storage, system maintenance, transportation, demilitarization, and disposal. · Addresses coordination of the HHA with manpower and personnel integration (MANPRINT) to include system safety engineering and human factors engineering (HFE) portions of the MADP. · Prescribes policies and procedures to identify and eliminate or control health hazards using risk assessment methods. · Document is available through http://www.apd.army.mil/series_range_pubs.asp?range=40
<p><i>U.S. Army - Risk Management</i></p>	<p>1.5</p>	<p>FM 100-14, <i>Risk Management</i>, 23 April 1998. Change Number 1, * August 2005</p> <ul style="list-style-type: none"> · This document explains the principles, procedures, and responsibilities to success-fully apply the risk management process to conserve combat power and resources. The manual applies to both Army and civilian personnel during all Army Activities, including joint, multinational, and interagency environments. The manual provides commanders, their staffs, leaders, and managers a risk management process framework. Additionally, it helps to make risk management a routine part of planning, preparing, and executing operational missions and everyday tasks. · Document is available at http://www.dtic.mil/doctrine/jel/service_pubs/100_14.pdf. Change Number 1 is at http://www.nd.edu/~army/fm100_14c.pdf.
<p><i>U.S. Army/U.S. Navy/U.S. Marine Corps/U.S. Air Force - Risk Management</i></p>	<p>1.6</p>	<p>Field Manual 3-100.12/Marine Corps Reference Publication 5-12.1C/Navy Tactics, Techniques, and Procedures 5-03.5/Air Force Tactics, Techniques, and Procedures (I) 3-2.34, <i>Risk Management: Multi-Service Tactics, Techniques, and Procedures for Risk Management</i>, 15 February 2001</p> <ul style="list-style-type: none"> · This publication provides multi-service tactics, techniques, and procedures for tactical level risk management in the planning and execution of operations in a joint environment. · Provides a basic risk management process that may be used by all services. It applies to all elements of a force that assists in planning and conducting force protection. · Provides risk management tools for commanders and staffs to use to manage risk during planning, preparation, and execution of joint operations. · Document is available at http://www.army.mil/usapa/doctrine/100_Series_Collection_1.html.

U.S. EPA - FQPA - Pesticide Risk	1.7	<p>OPPTS The Food Quality Protection Act (FQPA) of 1996 amended the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Federal Food Drug, and Cosmetic Act (FFDCA). These amendments fundamentally changed the way EPA regulates pesticides.</p> <ul style="list-style-type: none"> · The implementation of the FQPA requires development of policies in areas such as aggregate and cumulative risk. · Information is available at: http://www.epa.gov/pesticides/regulating/laws/fqpa/.
U.S. EPA - Superfund	1.8	<p>US Environmental Protection Agency, http://www.epa.gov/ The EPA utilizes risk assessments in less than a half dozen major environmental laws and many minor ones. Specifically in the field of Superfund, they have developed standardized methods for human and environmental risk assessments.</p> <ul style="list-style-type: none"> · Superfund web page contains links to databases, software, and other technical tools for conducting a risk assessment. · Information on these tools can be found at: http://www.epa.gov/superfund/health/index.htm.
U.S. EPA - TSCA	1.9	<p>Office of Pollution Prevention and Toxics implements the Toxic Substances Control Act. Under TSCA, EPA has broad authority to issue regulations designed to gather health/safety and exposure information on, require testing of, and control exposure to chemical substances and mixtures.</p> <ul style="list-style-type: none"> · OPPT has developed several exposure assessment methods, databases, and predictive models. · Information regarding these tools can be found at: http://www.epa.gov/opptintr/exposure/.
U.S. FDA - Food Bioterrorism/ Risk	1.10	<p>Food and Drug Administration. <i>Interim Final Regulation, Registration Of Food Facilities</i>, October 10, 2003.</p> <ul style="list-style-type: none"> · The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (the Bioterrorism Act) directs the Secretary of Health and Human Services to take steps to protect the public from a threatened or actual terrorist attack on the U.S. food supply. · Published to carry out the provisions of the Bioterrorism Act. Rule requires domestic and foreign facilities that manufacture/process, pack, or hold food for human or animal consumption in the United States to register with the FDA. · Under this interim final regulation, all affected facilities must register by December 12, 2003. · In the event of a potential or actual bioterrorism incident or an outbreak of food-borne illness, facility registration information will help FDA to determine the location and source of the event and permit the agency to notify quickly facilities that may be affected. · Information is available at: http://www.cfsan.fda.gov/~dms/fsbtac12.html.

<p><i>U.S. Navy - Hazardous Material Health Hazard Assessment</i></p>	<p>1.11</p>	<p>BUMEDINST 6270.8a, <i>Procedures for Obtaining Health Hazard Assessments</i>, 3 January 2002.</p> <ul style="list-style-type: none"> · Provides information to minimize the health hazards posed by materials or systems under development. · Establishes formal procedures for obtaining toxicological information on materials evaluated in the research and development process for introduction into naval service or for new applications. · Assigns responsibilities within the Medical Department for performing risk assessments · Document is available at: http://navymedicine.med.navy.mil/Files/Media/directives/6270-8a.pdf.
<p><i>U.S. Navy - Risk Management</i></p>	<p>1.12</p>	<p>OPNAV Instruction (OPNAVINST) 3500.39B, <i>Operational Risk Management</i>, 30 July 2004.</p> <ul style="list-style-type: none"> · This directive establishes establish Operational Risk Management (ORM) as an integral part of the decision-making process for all navy military and civilian personnel, on or off duty. It involves training and planning at all levels in order to optimize operational capability and readiness by teaching personnel to make sound decisions regardless of the activity in which they are involved. · It discusses how ORM is a method for identifying hazards, assessing risks and implementing controls to reduce the risk associated with any operation. · Document is available at: http://www.safetycenter.navy.mil/instructions/orm/3500_39B.pdf.
<p><i>U.S. OSHA - Exposure Risk</i></p>	<p>1.13</p>	<p>OSHA develops Permissible Exposure Limits (PELs) for occupational exposure to carcinogens and non-carcinogens. The regulatory focus is on the risk to a worker exposed to the permitted level for a full working life.</p> <ul style="list-style-type: none"> · Particulars of OSHA risk assessment practice are found in documentation of analyses performed in support of specific regulatory actions. · Particulars may be found in the Preambles to many of the OSHA Substance-Specific Standards or by starting at the OSHA website: http://www.osha.gov/index.html
<p><i>U.S. OSHA - Exposure Risk</i></p>	<p>1.14</p>	<p>OSHA's Hazard Exposure and Risk Assessment Matrix for Hurricane Response and Recovery.</p> <ul style="list-style-type: none"> · In this Hazard Exposure and Risk Assessment Matrix, OSHA provides information on many of the most common and significant additional hazards that response and recovery workers might encounter when working in an area recently devastated by a hurricane. · This Matrix highlights a number of tasks and operations associated with disaster response and recovery. · The Matrix is designed to help employers make decisions during their risk assessment that will protect their employees working in hurricane-impacted areas. · The Matrix and instructions for use are at http://www.osha.gov/SLTC/etools/hurricane/index.html.

2. Consensus Standards		
<i>ASTM - Risk Based Corrective Action</i>	2.1	American Society for Testing Materials. <i>Standard Provisional Guide for Risk-Based Corrective Action</i> . PS104-98 ASTM, West Conshohocken, PA. 1997 <ul style="list-style-type: none"> · Covers risk-based corrective action (RBCA), a decision-making process for the assessment and response to chemical releases. · Develops a tiered approach to site evaluation.
3. Guidelines, Position Statements, and Criteria Documents		
<i>ATSDR - Toxicological Profile Sheets</i>	3.1	Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile Information Sheets on hazardous substances found at National Priorities List (NPL) sites are available with current information. <ul style="list-style-type: none"> · Ranks hazards based on frequency of occurrence at NPL sites, toxicity, and potential for human exposure. · Information available at http://www.atsdr.cdc.gov/toxpro2.html.
<i>Department of Defense - Minimum Building Vulnerability Standards</i>	3.2	Unified Facilities Criteria (UFC), UFC 4-010-01, <i>DOD Minimum Antiterrorism Standards for Buildings</i> , 8 October 2003, including Change 1, 22 January 2007. <ul style="list-style-type: none"> · Outlines effective ways to minimize the likelihood of mass casualties from terrorist attacks against DoD personnel in the buildings in which they work and live. · Based on philosophy that comprehensive protection against the range of possible threats may be cost prohibitive, but that an appropriate level of protection can be provided for all DoD personnel at a reasonable cost and lessen the risk of mass casualties resulting from terrorist attacks. · Full implementation of these standards will provide some protection against all threats and will significantly reduce injuries and fatalities for the threats upon which these standards are based. · The costs associated with those levels of protection are assumed to be less than the physical and intangible costs associated with incurring mass casualties. · Emphasizes that protecting people on a DoD installation or site must start with an understanding of the risk of a terrorist attack and that application of the standards should be consistent with the perceived or identified risk. · Document available at: http://www.wbdg.org/ccb/DOD/UFC/ufc_4_010_01.pdf.

<p><i>FDA - Food Risk Assessment</i></p>	<p>3.3</p>	<p>US Food and Drug Administration, <i>Risk Assessment for Food Terrorism and Other Food Safety Concerns</i>, 7 October 2003.</p> <ul style="list-style-type: none"> · Provides assessment of the risks to public health of a terrorist attack on the food supply and of serious illness due to inadvertent food contamination. · Risk assessment uses scientific evidence on food terrorism to the extent that it exists and is available · Follows the generally accepted framework for risk assessments endorsed by the Codex Alimentarius Commission, the U.S. National Academy of Sciences, and other authoritative bodies. · Framework divides risk assessment into four components: (1) hazard identification, (2) hazard characterization (or dose-response assessment), (3) exposure assessment, and (4) risk characterization. · Assessment addresses the broad range of hazards available to terrorists intending to sabotage food, as well as hazards that accidentally are introduced into food. · Online document is available at: http://www.cfsan.fda.gov/~dms/rabtact.html - i.
<p><i>FEMA - Hazard Risk Assessment</i></p>	<p>3.4</p>	<p>Federal Emergency Management Agency (FEMA), "<i>Multi-Hazard Identification and Risk Assessment</i>" Document</p> <ul style="list-style-type: none"> · FEMA initiated a research project to clarify and document previous efforts to identify natural and technological hazards, and to assess associated risks. · This report, Multi-Hazard Identification and Risk Assessment, is prepared as a reference document to summarize the findings. · Document is available at: http://www.fema.gov/plan/prevent/fhm/ft_mhira.shtm
<p><i>National Institute for Occupational Safety and Health - Vulnerability</i></p>	<p>3.5</p>	<p>National Institute for Occupational Safety and Health (NIOSH) DHHS 2002-139 <i>Guidance for Protecting Building Environments from Airborne Chemical, Biological or Radiological Attacks</i>, May 1, 2002.</p> <ul style="list-style-type: none"> · Document identifies actions that a building owner or manager can implement without undue delay to enhance occupant protection from an airborne chemical, biological, or radiological (CBR) attack. · The intended audience includes building owners, managers, and maintenance personnel of public, private, and governmental buildings, including offices, laboratories, hospitals, retail facilities, schools, transportation terminals, and public venues (for example, sports arenas, malls, coliseums). · Document is available at: http://www.wbdg.org/ccb/NIOSH/2002_139.pdf.

<p><i>U.S. Army Center for Health Promotion and Preventive Medicine - Health Risk Management</i></p>	<p>3.6</p>	<p>U.S. Army Center for Health Promotion and Preventive Medicine Technical Guide 248, <i>Guide for Deployed Preventive Medicine Personnel on Health Risk Management</i>, August, 2001</p> <ul style="list-style-type: none"> · This technical guide introduces the processes and tools that can be used to make appropriate decisions based on the medical threat. It is written for preventive medicine personnel who are assigned the task of providing health risk assessments to the commander based on occupational and environmental health and endemic disease surveillance for deployments. · Directed at medical staff-level personnel who will be identifying, assessing, and communicating these hazards in the operational risk management process. · Provides a general overview of how these hazards can be evaluated within the context of Field Manual (FM) 100-14, Risk Management, and how to communicate these risks to the commander. · Document is available at http://chppm-www.apgea.army.mil/documents/TG/TECHGUID/TG248.pdf.
<p><i>U.S. Army Center for Health Promotion and Preventive Medicine - Chemical Exposure Guidelines</i></p>	<p>3.7</p>	<p>U.S. Army Center for Health Promotion and Preventive Medicine Technical Guide 230, <i>Chemical Exposure Guidelines for Deployed Military Personnel</i>, Version 1.3 updated May 2003 with January 2004 Addendum.</p> <ul style="list-style-type: none"> · This Technical Guide provides application guidance describing how the Military Exposure Guidelines can be used to characterize the level of health and mission risks associated with identified or anticipated exposures to chemicals in the deployment environment in a manner consistent with the existing military Operational Risk Management (ORM) doctrine. · Provides military exposure guidelines for chemicals in air, water, and soil for use during deployments. The intent is that trained personnel such as preventive medicine officers, environmental staff officers, industrial hygienists, health risk assessors, or other medically trained personnel, can use this guide to consistently characterize risks from chemical exposures by use of a standardized process that is both scientifically supportable and militarily feasible. · Document is available at http://chppm-www.apgea.army.mil/documents/TG/TECHGUID/TG230.pdf.
<p><i>U.S. Department of Transportation Hazardous Materials Risk Management</i></p>	<p>3.8</p>	<p>U.S. Department of Transportation, <i>Risk Management Self-Evaluation Framework (RMSEF)</i>, Pipeline and Hazardous Materials Safety Administration, Office of Hazardous Materials Safety</p> <ul style="list-style-type: none"> · Provides a basic framework for managing risk as part of the hazardous materials transportation process. · Tool for all parties (regulators, shippers, carriers, emergency response personnel, etc.) to look at their operations and consider how they assess and manage risk. · RMSEF is not a regulatory requirement, a standard, or a "best practice." RMSEF is best considered as guidance and assistance

<p><i>U.S. EPA - Carcinogenic Risk Assessment</i></p>	<p>3.9</p>	<p>U.S. Environmental Protection Agency, <i>Guidelines for Carcinogen Risk Assessment</i>, Risk Assessment Forum, Environmental Protection Agency, EPA/630/P-03/001F, March 2005..</p> <ul style="list-style-type: none"> · These guidelines revise and replace the U.S. Environmental Protection Agency's (EPA's, or the Agency's) Guidelines for Carcinogen Risk Assessment, published in 51 FR 33992, September 24, 1986 (U.S. EPA, 1986a) and the 1999 interim final guidelines (U.S. EPA, 1999a; see U.S. EPA 2001b). They provide EPA staff with guidance for developing and using risk assessments. They also provide basic information to the public about the Agency's risk assessment methods. · Sets forth principles and procedures on the conduct of agency risk assessments. · Key features of the cancer guidelines include: a critical analysis of available information as the starting point for evaluation; mode of action; weight of evidence narrative; dose-response assessment; susceptible populations and life stages; evaluating risks from childhood exposures; and emphasis on characterization. . · Information available at: http://www.epa.gov/nceawww1/cancer.htm
<p><i>U.S. EPA - Mutagenicity Risk Assessment:</i></p>	<p>3.10</p>	<p>U.S. Environmental Protection Agency, <i>Guidelines for Mutagenicity Risk Assessment</i>, EPA/630/R-98/003, September 1986.</p> <ul style="list-style-type: none"> · Sets forth principles and procedures on the conduct of agency risk assessments, and to inform Agency decision makers and the public about these procedures. · Guidelines emphasize that risk assessments will be conducted on a case-by-case basis, giving full consideration to all relevant scientific information. · Does not deal with the issue of risk management. · Information available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=23160

<p><i>U.S. EPA - Chemical Mixtures Risk Assessment:</i></p>	<p>3.11</p>	<p>U. S. Environmental Protection Agency, <i>Guidelines for the Health Risk Assessment of Chemical Mixtures</i>, EPA/630/R-98/002, September 1986 . Addresses the 1986 Guidelines. The 1986 Guidelines for the Health Risk Assessment of Chemical Mixtures represent the Agency's science policy and are a procedural guide for evaluating data on the health risks from exposures to chemical mixtures. The emphasis is on dose response and risk characterization. The principles and concepts put forth in the Guidelines remain in effect. However, in 2000, EPA issued a new document, <i>Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures</i> (EPA/630/R-00/002 - August 2000). While the Guidelines describe broad principles and include few specific procedures, the 2000 guidance is a supplement that is intended to provide more detail on these principles and their applications.· Addresses the hazard identification, dose response, and risk characterization parts of the risk assessment of chemical mixtures.</p> <ul style="list-style-type: none"> · Represent primary Agency methodology for assessing risk from exposures to mixtures and incorporates state of the art research methodology. · Provides guidance for the use of several approaches depending on the nature and quality of the data. · Information available at: http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=22567.
<p><i>U.S. EPA - Chemical Mixtures Risk Assessment:</i></p>	<p>3.12</p>	<p>U. S. Environmental Protection Agency, <i>Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures</i>, EPA/630/R-00/002, August 2000. This supplementary guidance is intended to provide more detail on the principles and their applications outlined in the 1986 Guidelines for the Health Risk Assessment of Chemical Mixtures.</p> <ul style="list-style-type: none"> · Describes the risk assessment paradigm for mixtures including problem formulation, hazard identification, dose-response assessment, exposure, and risk characterization. · Procedures are described for assessment using data on the mixture of concern, data on a toxicologically similar mixture, and data on the mixture component chemicals. · Guidance is given for the use of several approaches depending on the nature and quality of the data. The appendices contain definitions, a discussion on toxicologic interactions and pharmacokinetic models, and a reprint of the 1986 Guidelines. · Information available at: http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=20533.

<p><i>U.S. EPA - Data Usability in Risk Assessment</i></p>	<p>3.13</p>	<p>U. S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, <i>Guidance for Data Useability in Risk Assessment, Part A</i>, Publication 9285.7-09A, April 1992.</p> <p>Part A is designed to provide data users with a nationally consistent basis for making decisions about the minimum quality and quantity of environmental analytical data that are sufficient to support Superfund risk assessment decisions, regardless of which parties conduct the investigation. Part B of this guidance addresses radioanalytical issues.</p> <ul style="list-style-type: none"> · Provides detailed approaches and basic recommendations for both obtaining and interpreting data for risk assessment. · Addresses remedial investigation sampling and analytical activities. · Addresses procedures for assessing the quality of the data. · Addresses options for combining environmental analytical data for varying levels of quality from different sources and incorporating into the risk assessment. · Addresses procedures for determining level of certainty in risk assessment based on uncertainty in the environmental analytical data. · Information available at: http://www.epa.gov/oswer/riskassessment/datause/parta.htm.
<p><i>U.S. EPA - Data Usability in Risk Assessment</i></p>	<p>3.14</p>	<p>U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response <i>Guidance for Data Usability in Risk Assessment (Part B)</i>, Publication 9285.7-09B, May 1992. Document is the second part of the two-part Guidance for Data Useability in Risk Assessment.</p> <ul style="list-style-type: none"> · Part B provides supplemental guidance to Part A on planning and assessing radioanalytical data needs for the baseline human health risk assessment conducted as part of the remedial investigation process at sites containing radioactive substances. · Part B is not a stand alone document and at all times should be used in conjunction with Part A. · Information available at: http://www.epa.gov/oswer/riskassessment/datause/partb.htm.
<p><i>U.S. EPA - Dermal Exposure Assessment</i></p>	<p>3.15</p>	<p>U.S. Environmental Protection Agency, National Center for Environmental Assessment, <i>Dermal Exposure Assessment: Principles & Application</i>, Interim Report, EPA/600/8-91/011B, January 1992.</p> <ul style="list-style-type: none"> · Provides principles of dermal absorption. · Includes procedures for applying these principles to human exposure situations. · Information available at: http://www.epa.gov/ncea/pdfs/derexp.pdf.

<p><i>U.S. EPA - Exposure Assessment Guidelines</i></p>	<p>3.16</p>	<p>U.S. Environmental Protection Agency, <i>Guidelines for Exposure Assessment</i>, 1992. EPA/600Z-92/001. FR 57: 22888 - 22938.</p> <ul style="list-style-type: none"> · Describes the general concepts of exposure assessment. · Provides guidance on the planning and conducting of an exposure assessment. · Provides guidance for presenting the results of the exposure assessment and characterizing uncertainty. · Guidance also pertains to assessing wildlife exposure to chemicals, or human exposures to biological, noise, or radiological agents. · Information available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=15263
<p><i>U.S. EPA - Exposure Factors Handbook</i></p>	<p>3.17</p>	<p>U.S. Environmental Protection Agency, <i>Exposure Factors Handbook</i> Volumes I-III, August 1997.</p> <ul style="list-style-type: none"> · Contains data on standard factors used by the Agency to calculate human exposure to toxic chemicals. · Factors include: drinking water consumption, soil ingestion, inhalation rates, dermal factors including skin area and soil adherence factors, consumption of fruits and vegetables, fish, meats, dairy products, homegrown foods, breast milk intake, human activity factors, consumer product use, and residential characteristics. · Information available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=12464.
<p><i>U.S. EPA - Highly Exposed Populations</i></p>	<p>3.18</p>	<p>U.S. Environmental Protection Agency, <i>Sociodemographic Data Used for Identifying Potentially Highly Exposed Populations</i>. EPA/600/R-99/060, 1999.</p> <ul style="list-style-type: none"> · Presents data relating to factors that potentially affect an individual or group's exposure to environmental contaminants based on activity patterns, microenvironments, and other sociodemographic data such as age, gender, race and economic status. · Populations potentially more exposed to various chemicals of concern, relative to the general population, are also addressed. · Information available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=22562.

<p><i>U.S. EPA - Human Health Risk Assessment</i></p>	<p>3.19</p>	<p>U.S. Environmental Protection Agency, <i>Summary of the U.S. EPA Colloquium On a Framework for Human Health Risk Assessment</i>, (Volume 1, 1997),. This colloquium focused on the role of mode of action information in re-examining and developing new risk assessment approaches. Appendix A is a white paper entitled <i>Human Health Risk Assessment: Current Approaches and Future Directions</i>, September 1997 that:</p> <ul style="list-style-type: none"> · · · Highlights issues regarding the Agency’s risk assessment approaches and their scientific basis. · Discusses the scientific basis for cancer and non-cancer risk assessment, and identifies knowledge gaps and areas where more work is needed. · Information available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=12186
<p><i>U.S. EPA - Human Health Risk Assessment</i></p>	<p>3.20</p>	<p>U.S. Environmental Protection Agency, <i>Summary of the U.S. EPA Colloquium on a Framework for Human Health Risk Assessment</i> (Volume 2, 1998).</p> <ul style="list-style-type: none"> · This colloquium focused on the exploration of the more quantitative aspects of mode of action, including dosimetry, dose-response relationships, and low-dose extrapolation methods. · Information available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=12186
<p><i>U.S. EPA - Neurotoxicity Risk Assessment</i></p>	<p>3.21</p>	<p>U.S. Environmental Protection Agency, <i>Guidelines for Neurotoxicity Risk Assessment</i>, April 30, 1998.</p> <ul style="list-style-type: none"> · Sets forth principles and procedures to guide EPA scientists in evaluating environmental contaminants that may pose neurotoxic risks, and informs Agency decision makers and the public about these procedures. · Bridge gaps in risk assessment methodology and data by identifying these gaps and the importance of the missing information to the risk assessment process · Information available at http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=12479.

<p><i>U.S. EPA - Probabilistic Risk Analysis</i></p>	<p>3.22</p>	<p>U.S. Environmental Protection Agency, <i>Guiding Principles for Monte Carlo Analysis</i>, EPA/630/R-97/001, March 1997.</p> <ul style="list-style-type: none"> · Presents a general framework and broad set of principles important for ensuring good scientific practices. · Describes the use of various techniques for characterizing variability and uncertainty. · The guiding principles are intended to serve as a minimum set of principles and are not intended to constrain or prevent the use of new or innovative improvements where scientifically defensible. · Information available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=29596
<p><i>U.S. EPA - Reproductive Toxicity Risk Assessment</i></p>	<p>3.23</p>	<p>U.S. Environmental Protection Agency, <i>Guidelines for Reproductive Toxicity Risk Assessment</i>, EPA/630/R-96/009, September 1996.</p> <ul style="list-style-type: none"> · Discuss the scientific basis for concern about exposure to agents that cause reproductive toxicity · Describe the principles and procedures to be followed in conducting risk assessments for reproductive toxicity. · Information available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=2838.
<p><i>U.S. EPA - Sources of Exposure Information</i></p>	<p>3.24</p>	<p>U.S. Environmental Protection Agency, <i>Inventory of Exposure-Related Data Systems Sponsored by Federal Agencies</i>, EPA/600/R-92/078, May 1992.</p> <ul style="list-style-type: none"> · This Inventory is intended to aid researchers in identifying potential sources of exposure information. These systems access collections of analytical results that assess environmental media such as air, soil, water, as well as analytical results from food, human samples, or bulk chemicals. The inventory focuses on data systems that: (1) Contain information on a large geographic area (i.e., national, regional, state, or region of a state-excluding individual research studies of limited scope); (2) Have data or summary documents that are generally available for research or other purposes; and (3) Are supported, at least in part, by public funds. · Document available from National Technical Information Service # AD-A279 308/1. · Information available at: http://yosemite.epa.gov/water/owrcatalog.nsf/065ca07e299b464685256ce50075c11a/9cc72511478318e885256b0600723e10!OpenDocument

<i>U.S. EPA - Superfund Risk Assessment</i>	3.25	<p>U.S. Environmental Protection Agency, <i>Risk Assessment Guidance for Superfund (RAGS), Human Health Evaluation Manual, Part A, EPA/540/1-89/002, December 1989</i> .</p> <ul style="list-style-type: none"> · Provides guidance on the human health evaluation activities that are conducted during the baseline risk assessment. · Baseline risk assessments are site-specific and therefore may vary in both detail and the extent to which qualitative and quantitative analyses are used, depending on the complexity and particular circumstances of the site, as well as the availability of applicable or relevant and appropriate requirements (ARARs) and other criteria, advisories, and guidance. · Information available at: http://www.epa.gov/oswer/riskassessment/ragsa/index.htm
4. Handbooks, Textbooks, and Review Articles		
<i>Handbooks</i>	4.1	
<i>American Chemical Society – Risk Analysis</i>	4.1.1	<p>American Chemical Society, <i>Understanding Risk Analysis</i>, 1998.</p> <ul style="list-style-type: none"> · Provide a brief, readable guide to risk analysis, especially to readers interested in health, safety, and environmental policy making. · Information available at: http://www.rff.org/rff/Publications/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=14418.
<i>National Research Council - – EPA Risk Assessment Practices</i>	4.1.2	<p>National Research Council, Board on Environmental Studies and Toxicology, <i>Science & Judgment in Risk Assessment</i>, National Academy Press, Washington, D.C., 1994. ISBN: 1560325895</p> <ul style="list-style-type: none"> · Describes the assumptions made by risk analysts and how they deal with uncertainty. · Describes how EPA currently assesses exposure to hazardous pollutants, evaluates the toxicity of a substance, and characterizes the risk to the public. · Suggests how EPA can improve the validity and credibility of its risk assessments by more fully utilizing scientific data and divulging the limits of knowledge. · Information available at: http://www.nap.edu/books/030904894X/html/index.html.

<p>National Research Council - The Red Book - Risk Assessment</p>	<p>4.1.3</p>	<p>National Research Council, Commission on Life Sciences, Risk Assessment in the Federal Government: Managing the Process, National Academy Press, Washington, D.C., 1983. ISBN No. 0-309-03349-7</p> <ul style="list-style-type: none"> · Published by the Commission on Life Sciences, Committee on the Institutional Means for Assessment of Risks to Public Health. · Explores relationship between science and policy in the assessment of risk of cancer and other adverse health effects associated with exposure to toxic substances. · Originally outlined the four step risk assessment paradigm: <ul style="list-style-type: none"> - Hazard identification - Dose-response assessment - Exposure assessment and - Risk characterization. · Information available at: http://www.nap.edu/books/0309033497/html/.
<p>Textbooks</p>	<p>4.2</p>	
<p>Overview Risk Assessment Case Studies</p>	<p>4.2.1</p>	<p>Paustenbach, D.J. The Risk Assessment of Environmental and Human Health Hazards: A Textbook of Case Studies, John Wiley & Sons, New York, NY, 1989. ISBN No. 978-0-471-84998-8</p> <ul style="list-style-type: none"> · Handbook for conducting risk assessments for environmental and occupational hazards. · Provides case studies as useful examples of risk assessment application for both novice and advanced practitioners. · Describes state-of-the-art approaches to assessing the low-dose response, estimating exposure, and evaluating the risks to birds and fish. · Information available at: http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471849987_descCd-description.html?print=true
<p>Quantitative Risk Assessment</p>	<p>4.2.2</p>	<p>Hallenbeck, W.H. Quantitative Risk Assessment for Environmental and Occupational Health, 2nd Ed., Lewis, Chelsea, MI, 1993. ISBN: 0873718011</p> <ul style="list-style-type: none"> · Features risk analysis models with complete examples. · Provides calculation of human dose rate and dose from experimental studies (animal and human); quantification of response; tests of significance; and calculation of excess risk. · Information available at: http://www.crepress.com/shopping_cart/products/product_detail.asp?sku=L801&isbn=0873718011&parent_id=&pc=.

<p>Quantitative Risk Assessment</p>	<p>4.2.3</p>	<p>Louvar, JF, Louvar, B. D., <i>Health & Environmental Risk Analysis: Fundamentals with Applications</i>, 1998. Prentice Hall; ISBN: 978-0131277397</p> <p>Designed for teaching and applying the fundamentals of health and environmental risk analysis. Explanations and case studies show how to identify potential hazards:</p> <ul style="list-style-type: none"> · Utilize EPA-compliant source models · Create fault trees to analyze the likelihood of a release, · Quantify the potential consequences of a chemical release, · Concepts and applicability of structural activity relationships (SARs) for identifying the hazards of chemicals.
<p>Quantitative Risk Assessment</p>	<p>4.2.4</p>	<p>Molak, V. (ed.) <i>Fundamentals of Risk Analysis and Risk Management</i>, CRC-Lewis, New York, NY, 1997.</p> <ul style="list-style-type: none"> · Comprehensive text that provides both theory and practical application of risk analysis. · Topics include risk perception, law, politics, risk communication, and risk management. · Information available at: http://www.environetbase.com/ejournals/books/book_summary/summary.asp?id=1305.
<p>Quantitative Risk Assessment Case Studies</p>	<p>4.2.5</p>	<p><i>Should We Risk It? Exploring Environmental, Health, and Technological Problem Solving</i>, Daniel M. Kammen and David M. Hassenzahl, Princeton University Press, Princeton, NJ, 1999. ISBN: 978-0-691-07457-3.</p> <ul style="list-style-type: none"> · Addresses different theories and methodologies connected with risk analysis for health, environmental, and technological problems. · Provides case studies and worked problems. · Addresses order-of-magnitude estimation, dose-response calculations, exposure assessment, extrapolations and forecasts based on experimental or natural data, modeling and the problems of complexity in models, fault-tree analysis, managing and estimating uncertainty, and social theories of risk and risk communication. · Addresses basic and intermediate statistics, as well as Monte Carlo methods, Bayesian analysis, and various techniques of uncertainty and forecast evaluation. · Ordering information available at: http://www.pupress.princeton.edu/

<p>Quantitative Risk Assessment Models</p>	<p>4.2.6</p>	<p>Haimes, Y.Y. <i>Risk Modeling, Assessment, and Management, 2nd Edition</i>, John Wiley & Sons, New York, NY, April 2004. ISBN: 978-0-471-48048-8</p> <ul style="list-style-type: none"> · Describes the state of the art of risk management and its important applications in such areas as engineering, science, manufacturing, business, management, and public policy. · Incorporates real-world examples and case studies to illustrate the analytical methods. · Discusses risks of terrorism, with case studies in transportation, water supply, infrastructure interdependencies, food safety, and a National Research Council report on terrorism. · Information available at: http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471480487.html
<p>Risk Assessment Principles</p>	<p>4.2.7</p>	<p>Jayjock, M.A., Lynch, J.R., Nelson, D.I., <i>Risk Assessment Principles for the Industrial Hygienist</i>, AIHA Press, Fairfax, VA, 2000. ISBN 0-932627-97-8</p> <ul style="list-style-type: none"> · Designed to introduce and outline the basic tenants of the risk assessment paradigm. · Provides most recent risk assessment methodologies for use in the daily practice of industrial hygiene. · Provides a compendium of integrated relevant information for the industrial hygienist doing human health risk assessment. · Topics include: <ul style="list-style-type: none"> - National Academy of Science Risk Assessment Paradigm for IH; - Science and Judgment; - Dealing with Uncertainty in Risk Assessment; - Risk Management: Philosophy of "Acceptable Risk" and its Relationship to Occupational Exposure Limits; - Tiered Approach to Risk Assessment and Risk Management; and - Future of Industrial Hygiene and Risk Assessment. · Information available at: http://iweb.aiha.org/iweb/Purchase/ProductDetail.aspx?Product_code=ARAR00-380.

<i>System Safety</i>	4.2.8	<p>Roland, H.E. and Moriarty, B., <i>System Safety Engineering and Management, 2nd Edition</i>, John Wiley & Sons, Inc., New York, NY, October 1990. ISBN: 978-0-471-61816-4</p> <ul style="list-style-type: none"> · While designed to be a practicing system safety professional's reference manual, this book provides information that industrial hygiene, and other occupational health professionals can use. · Contains elements of the field of risk assessment and management · The methods used in a systems safety approach to anticipate accidents and judge the total risk of a system over its life cycle can also be applied by scientists and engineers within the broader safety and occupational health profession. · Based on methods and practices used by Department of defense, Department of Energy, National Aeronautics and Space Administration, and general industry practices. · Information available at: http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471618160.html.
<i>System Safety</i>	4.2.9	<p>Stephenson, J., <i>System Safety 2000: A Practical Guide for Planning, Managing, and Conducting System Safety Programs</i>, John Wiley & Sons, Inc., New York, NY, ISBN 0-471-28914-0</p> <ul style="list-style-type: none"> · Describes how various systemic techniques interface and can combine to form a complete system to solve safety and health problems. · Emphasizes viewing the whole system and interacting systems using an interdisciplinary approach. · Provides a common ground for assessing a systems approach to safety and health disciplines and practice. · Provides information to demonstrate why system safety analytical tools and techniques are efficient, cost-effective planning and review tools. · Provides coverage of analytical trees, risk assessment and acceptance, and risk exposure coding.
<i>Review Articles</i>	4.3	
<i>Chemical Hazard Prioritization</i>	4.3.1	<p>Hauschild, V. H., Bratt, G. M., <i>Journal of Toxicology and Environmental Health Part A, Prioritizing Industrial Chemical Hazards</i>, Publisher: Taylor & Francis, Issue: Volume 68, Number 11-12/June 11-June 25 2005, Pages: 857-876.</p> <ul style="list-style-type: none"> · Article describes the approach used to develop a prioritized list of toxic and hazardous industrial chemical hazards considered to pose substantial risk to deployed troops and military operations · Methodology designed to rank such hazards from a strategic (global) military perspective, but it may be adapted to address more site/user specific needs.

Estimating Health Hazard Costs	4.3.2	<p>Bratt, G. M., Doganiero, D.M., Spencer, C. O., <i>Estimating the Health Hazard Costs of Army Materiel: A Method for Helping Program Managers Make Informed Health Risk Decisions</i>, Acquisition Review Quarterly, Volume 4, Number 4, 443-447, 1997.</p> <ul style="list-style-type: none"> · Provides a framework for a medical cost avoidance model that provides a method to quantify reasonable estimates of the medical and lost time costs associated with unabated Army materiel health hazards. · Model can be applied to other prevention disciplines in product research and development and occupational safety and health. · Environmental engineers and health risk assessors could estimate medical costs associated with the cleanup of hazardous waste sites, and other environmental health hazards from pollution. · Information available at: http://www.dau.mil/pubs/arq/97arq/brat.pdf
Risk Assessment Evolution	4.3.3	<p>Graham, J.D., <i>Historical perspective on risk assessment in the federal government</i>. Toxicology 102 29-52 (1995), Center for Risk Analysis, Harvard School of Public Health, Boston, MA.</p> <ul style="list-style-type: none"> · Traces the evolution and application of risk assessment, both appropriate and inappropriate, in the federal government regulatory environment. · References many important papers in the development of risk assessment. <p>Information available at: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7482560&dopt=Abstract.</p>
Risk v. Hazard	4.3.4	<p>Tucker, M.E. et al., <i>Environmental Assessment of Chemicals: Criteria for Distinguishing Risk from Hazard</i>. SETAC News 19 26-27 (1999)</p> <ul style="list-style-type: none"> · Offers criteria for distinguishing chemical assessment tools based upon concepts of hazard, exposure, and risk.
US Army Health Hazard Assessment Program - Risk Assessment Process	4.3.5	<p>Murnyak, G. R., Leggieri, M. J., Roberts, W.C., <i>The Risk Assessment Process used in the Army's Health Hazard Assessment Program</i>, Acquisition Review Quarterly, Spring 2003, 200-216, 2003.</p> <ul style="list-style-type: none"> · Provides the acquisition community with an overview of the risk assessment process used in preparing health hazard assessment (HHA) reports and the key roles played by Army Medical Department organizations. · Shows how HHA reports are integral components of a Program Manager's overall risk management plan. · Information available at: http://www.dau.mil/pubs/arq/2003arq/Spring2003/MurnyakSP3.pdf
Booklets	4.4	

Product Risk Management	4.4.1	<p>Food and Drug Administration, U.S. Department of Health and Human Services, <i>Managing the Risks from Medical Product Use, Creating A Risk Management Framework</i>, Report to the FDA Commissioner from the Task Force on Risk Management, May 1999.</p> <ul style="list-style-type: none"> · Evaluates the system for managing the risks of FDA-approved medical products. · Presents some options for expanding the use of automated systems for reporting, monitoring, and evaluating adverse events and product defects. · Provides recommendations and options for improving risk management of medical products. · Information available at: http://www.fda.gov/oc/tfrm/riskmanagement.pdf
Risk Assessment Overview	4.4.2	
Reports	4.5	
Aggregate Exposure Assessment	4.5.1	<p><i>Aggregate Exposure Assessment</i>, ILSI Risk Science Institute Workshop Report, 1998.</p> <ul style="list-style-type: none"> · Defines aggregate exposure assessment · Presents highlights of the discussion and conclusions from the workshop. · Exploration of methods and issues for aggregate exposure assessment. · Access at: http://rsi.ilsi.org/file/rsiaggexp.pdf
Commission on Risk Assessment and Risk Management	4.5.2	<p>The Presidential/Congressional Commission on Risk Assessment & Risk Management, <i>Framework for Environmental Health Risk Management (Volume 1) & Risk Assessment and Risk Management In Regulatory Decision-Making (Volume 2)</i>, Washington, D.C., 1997.</p> <p>Examines:</p> <ul style="list-style-type: none"> · Uses and limitations of risk assessment in environmental decision-making · Appropriate exposure scenarios for estimation of risks · Most effective ways to describe or explain uncertainties · Various policy issues in risk management · Inconsistencies across agencies · Information available at: http://www.riskworld.com/riskcommission/Default.html

<p><i>Cumulative Risk Assessment</i></p>	<p>4.5.3</p>	<p>U.S. Environmental Protection Agency's Risk Assessment Forum, <i>Framework for Cumulative Risk Assessment</i>, EPA/630/P-02/001F, May 2003</p> <ul style="list-style-type: none"> · Focuses on cumulative approach to risk assessment. · Defines cumulative risk assessment as an analysis, characterization, and possible quantification of the combined risks to human health or the environment from multiple agents or stressors. · First step in a long-term effort to develop cumulative risk assessment guidance. · Identifies the basic elements of the cumulative risk assessment process and provides a flexible structure for conducting and evaluating cumulative risk assessment, and for addressing scientific issues related to cumulative risk. · Document and a fact sheet are available at http://www.riskworld.com/Nreports/NR5ME001.HTM
<p><i>Cumulative Risk Assessment</i></p>	<p>4.5.4</p>	<p><i>A Framework for Cumulative Risk Assessment</i>, An ILSI Risk Science Institute Workshop Report, 1999.</p> <ul style="list-style-type: none"> · Presents a framework to guide the conduct of cumulative risk assessments. · Focuses on methods to assess the risks due to exposure of non-carcinogenic chemicals that act by a common mechanism of toxicity. · Information available at: http://rsi.ilsi.org/Publications/RAFramework.htm.
<p><i>Federal Regulatory Agencies' Risk Assessment Practices</i></p>	<p>4.5.5</p>	<p>Lorenz R. Rhomberg, <i>A Survey of Methods for Chemical Health Risk Assessment Among Federal Regulatory Agencies</i>, Harvard Center for Risk Analysis, 1996.</p> <ul style="list-style-type: none"> · Surveys and compares risk assessment practices by Food and Drug Administration (Center for Food Safety and Applied Nutrition), the Occupational Safety and Health Administration, the Consumer Product Safety Commission, and the Environmental Protection Agency. . · Information available at: http://www.riskworld.com/Nreports/1996/risk_rpt/html/nr6aa046.htm
<p><i>National Institute of Justice</i></p>	<p>4.5.6</p>	<p>National Institute of Justice, <i>A Method to Assess the Vulnerability of U.S. Chemical Facilities</i>, Washington, D.C., November 2002.</p> <ul style="list-style-type: none"> · Presents an overview of a tool for assessing the potential security risks at chemical facilities, focusing on terrorist or criminal actions that could have significant national impact or could cause the airborne release of hazardous chemicals resulting in deaths and contamination. · Describes a twelve-step assessment methodology. <p>Information available at: http://www.ojp.usdoj.gov/nij/pubs-sum/195171.htm</p>

<p>Risk Assessment to Children</p>	<p>4.5.7</p>	<p>U.S. Environmental Protection Agency, <i>A Framework for Assessing Health Risk of Environmental Exposures to Children (Final)</i>, EPA/600/R-05/093F, September 2006.</p> <ul style="list-style-type: none"> · Outlines the framework in which mode of action(s) (MOA) can be considered across life stages. · Improves the scientific explanation of children's risk. · Provides for a more complete evaluation of the potential for vulnerability at different life stages. · Evaluates the potential for toxicity after exposure during all developmental life stages. · Integrates adverse health effects and exposure information across life stages. · Information available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=158363
<p>Risk Management Decision-Making</p>	<p>4.5.8</p>	<p>Gail Charnley, Ph.D. <i>Enhancing the Role of Science in Stakeholder-Based Risk Management Decision-Making</i>, Health Risk Strategies, July 2000.</p> <ul style="list-style-type: none"> · Prepared at the request of the American Industrial Health Council and the American Chemistry Council in response to their concern that the growing use of stakeholder processes in environmental risk management decision-making has the potential to compromise the integrity and importance of science as a guide to risk management. · Examines how the integrity of science can be maintained while more democratic risk management decision-making processes are being implemented. · Focuses on the role of science in risk management decisions made by convening groups of stakeholders who met, debated, and either agreed or disagreed about appropriate actions. · Does not focus on policy decisions made by regulators, debated in the media and in the courts, where different stakeholders disagreed about the nature of the scientific evidence related to the decisions · Document is available at: http://www.riskworld.com/Nreports/2000/Charnley/NR00GC00.htm
<p>Risk Reduction</p>	<p>4.5.9</p>	<p>The World Health Report 2002, <i>Reducing Risks, Promoting Healthy Life</i>, October 2002.</p> <ul style="list-style-type: none"> · Emphasizes that best health policies are based on scientific evidence. · Contains the scientific evidence. Provides information for country leaders to determine the most appropriate, most cost-effective measures it can take to reduce risks and promote healthy life for their people. · Explains the importance of risk communication to the public, and of creating an atmosphere of trust and shared responsibility between the government, the public at large and the media. · Emphasizes reducing health risks is the responsibility of and all people, in all populations, and of all those who serve them. · Document is available at: http://www.who.int/whr/2002/en/.

5. Professional Organizations

5.1. Professional Organizations (Phone numbers and web sites)

	<p>American Conference of Governmental Industrial Hygienists (513) 742-2020 Website: http://www.acgih.org/home.htm</p> <p>American Industrial Hygiene Association—Risk Assessment Committee (703) 849-8888 Website: http://www.aiha.org/</p> <p>American Statistical Association (703) 684-1221 Website: http://www.amstat.org/</p> <p>American Statistical Association, Section on Risk Analysis (703) 684-1221 Website: http://www.amstat.org/sections/srisk/</p> <p>Decision Analysis Society Not published Website: http://decision-analysis.society.informs.org/</p> <p>International Society of Exposure Analysis (617) 482-9485 Website: http://www.iseaweb.org/</p> <p>Risk Assessment and Policy Association (603) 228-1541 Website: http://www.piercelaw.edu/risk/rapa.htm</p> <p>Society for Risk Analysis (703) 790-1745 Website: http://www.sra.org/</p> <p>Society of Toxicology (703) 438-3115. Website: http://www.toxicology.org/</p>
5.2. “Targeted” Web Site Addresses	

<i>Alliance for Chemical Awareness</i>	5.2.1	<p>Alliance for Chemical Awareness is an initiative by the business community, working with guidance from government agencies and non-governmental organizations, to enhance the quality of information available to the public about the manufacture, uses, exposures, and risks of major chemicals in commerce</p> <ul style="list-style-type: none"> · Provides a compendium of tools for exposure and risk assessment of HPV chemicals for beginners and advanced users. · Provides guidance and examples and a case study for risk communications. · Information available at: http://www.chemicalawareness.org/toolkit/
<i>ATSDR</i>	5.2.2	<p>Agency for Toxic Substances and Disease Registry (ATSDR) is directed by congressional mandate to perform specific functions concerning:</p> <ul style="list-style-type: none"> · The effect on public health of hazardous substances in the environment. · Issues include many aspects of public risk assessment. · ATSDR maintains many data resources for use concerning hazardous substances. · Information available at: http://www.atsdr.cdc.gov/
<i>Decision Analysis Society</i>	5.2.3	<p>Decision Analysis Society</p> <ul style="list-style-type: none"> · Promotes the development and use of logical methods for the improvement of decision-making in public and private enterprise · Uses methods that include models for decision-making under conditions of uncertainty or multiple objectives; techniques of risk analysis and risk assessment; experimental and descriptive studies of decision-making behavior; economic analysis of competitive and strategic decisions; techniques for facilitating decision-making by groups; and computer modeling software and expert systems for decision support · Information available at http://decision-analysis.society.informs.org/.
<i>Department of Homeland Security</i>	5.2.4	<p>Department of Homeland Security</p> <ul style="list-style-type: none"> · Responsible for assessing the nation's vulnerabilities. It takes the lead in evaluating vulnerabilities and coordinating with other federal, state, local, and private entities to ensure the most effective response. Collects, protects, evaluates, and disseminates information to the American public, state and local governments and the private sector. · Homeland Security leverages resources within federal, state, and local governments, coordinating the transition of multiple agencies and programs into a single, integrated agency focused on protecting the American people and their homeland. More than 87,000 different governmental jurisdictions at the federal, state, and local level have homeland security responsibilities. The comprehensive national strategy seeks to develop a complementary system connecting all levels of government without duplicating effort. · Information available at: http://www.dhs.gov/index.shtm

FAO	5.2.5	<p>Food And Agriculture Organization Of The United Nations. The FAO's mission is to raise levels of nutrition and standards of living, to improve agricultural productivity, and to better the condition of rural populations. Website contains information about food risk assessment, security and vulnerability, risk communication, and risk management.</p> <p>Information available at: http://www.fao.org/</p>
FDA	5.2.6	<p>Food and Drug Administration. The FDA is responsible for protecting the public health by assuring the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, our nation's food supply, cosmetics, and products that emit radiation. The FDA is also responsible for advancing the public health by helping to speed innovations that make medicines and foods more effective, safer, and more affordable; and helping the public get the accurate, science-based information they need to use medicines and foods to improve their health.</p> <ul style="list-style-type: none"> · Website contains information about above subjects as well as information on bioterrorism, counter terrorism, and food terrorism risk assessment. · Website is at: http://www.fda.gov/default.htm
FEMA	5.2.7	<p>Federal Emergency Management Agency (FEMA). FEMA became part of the U.S. Department of Homeland Security 1 March 2003. FEMA's mission is to reduce the loss of life and property and protect our nation's critical infrastructure from all types of hazards, through a comprehensive emergency management program of risk reduction, preparedness, response and recovery. The website contains valuable information for occupational safety and health professionals involved with emergency preparedness and response.</p> <ul style="list-style-type: none"> · Provides emergency preparedness and response information to emergency personnel. · Provides information for local and State governments for protecting their citizens from disasters, and for helping them to recover when a disaster strikes. · Provides many programs, courses, and materials to support emergency preparedness and response for emergency personnel as well as the general public · Provides additional media resources · Website is at http://www.fema.gov/
IPCS	5.2.8	<p>International Programme on Chemical Safety (IPCS)</p> <ul style="list-style-type: none"> · Mission is to establish the scientific health and environmental risk assessment basis for safe use of chemicals (normative functions) and to strengthen national capabilities for chemical safety (technical cooperation). · Promotes the development, harmonization and use of generally acceptable, scientifically sound methodologies for the evaluation of risks to human health and the environment from exposure to chemicals. · Information available at http://www.who.int/pcs/index.htm.

<i>ISEA</i>	5.2.9	<p>International Society for Exposure Analysis (ISEA)</p> <ul style="list-style-type: none"> · Fosters and advances the science of exposure analysis related to environmental contaminants, human populations and activities, and ecosystems. · Information available at: http://www.iseaweb.org/
<i>RAPA</i>	5.2.10	<p>Risk Assessment and Policy Association (RAPA)</p> <ul style="list-style-type: none"> · Promotes multidisciplinary research on the theory and practice of risk assessment and management. · Fosters intellectual exchange among researchers, risk assessors, and policy makers. · Encourages public involvement in risk assessment and management · Examines the use of risk assessment in legislative, regulatory and other policy deliberations in the U.S. and elsewhere. · Studies the use of risk analysis in decision-making. · Information available at: http://www.piercelaw.edu/risk/rapa.htm
<i>SOT</i>	5.2.11	<p>Society of Toxicology (SOT)</p> <ul style="list-style-type: none"> · Professional organization of scientists from academic institutions, government, and industry. · Promotes the acquisition and utilization of knowledge in toxicology, aids in the protection of public health, and facilitates disciplines. · <u>Information available at:</u> http://www.toxicology.org/
<i>SRA</i>	5.2.12	<p>Society for Risk Analysis (SRA)</p> <ul style="list-style-type: none"> · Interests include science, technology, and politics of studying risks to human health and the environment. · Consider threats from physical, chemical, and biological agents and from a variety of human activities as well as natural events. · Analyze risks of concern to individuals, to public and private sector organizations, and to society at various geographic scales. · Information available at: http://www.sra.org/

6. Other Resources		
CalEPA, Department of Toxic Substances	6.1	<p>Human and Ecological Risk Division (HERD) of Department of Toxic Substances, CalEPA provides:</p> <ul style="list-style-type: none"> · Scientific support in the areas of: <ul style="list-style-type: none"> - Toxicology - Human and ecological risk assessment - Exposure assessment and - Industrial hygiene. · Scientific support is also available for: <ul style="list-style-type: none"> - Waste classification and assessment - Development of hazardous waste definition criteria for the Department of Toxic Substances Control Programs engaged in the cleanup and management of hazardous waste - Pollution prevention and - Environmental technology development, evaluation, and certification. · Information available at: http://www.dtsc.ca.gov/AssessingRisk/HERD_FLY_Overview.cfm
CalEPA, Office of Environmental Health Hazard Assessment.	6.2	<p>Office of Environmental Health Hazard Assessment, CalEPA:</p> <ul style="list-style-type: none"> · Responsible for developing and providing risk managers in state and local government agencies with toxicological and medical information relevant to decisions involving public health. · Works with Federal agencies, the scientific community, industry and the general public on issues of environmental as well as public health. · Information available at: http://www.oehha.ca.gov/
EOHSI	6.3	<p>Environmental and Occupational Health Sciences Institute (EOHSI)</p> <ul style="list-style-type: none"> · An international resource that supports basic and clinical research in environmental health sciences and exposure assessment and fosters associated programs in environmental health education and public policy. · Sponsors research, education and service programs in a setting that fosters interaction among experts in environmental health, toxicology, occupational health, exposure assessment, public policy, and health education. · Has divisions in environmental health policy, toxicology, clinical research and occupational medicine, exposure science, environmental epidemiology and statistics, and public education and risk communication. · EOHSI members serve as advisors to international, national, state and local organizations on various public health issues · Information available at: http://eohsi.rutgers.edu/

HCRA	6.4	<p>Harvard Center for Risk Analysis (HCRA)</p> <ul style="list-style-type: none"> · Created in 1989 to promote reasoned, risk based responses and allocation of resources for public health, safety and environmental issues. · A multidisciplinary group of faculty, research staff, students, and visiting scholars who work together to improve decisions about environmental health. · Research is focused broadly on developing risk, economic, and decision analysis methods that are well-grounded in the natural and social sciences. · Information available at: http://www.hcra.harvard.edu/index.html
Health Canada	6.5	<p>Health Canada's approach to health risk assessment of chemicals is described in <i>Human Health Risk Assessment for Priority Substances</i>. Describes:</p> <ul style="list-style-type: none"> · Development of multimedia exposure estimates. · Classification of substances based on the nature of the critical effect. · Approach to the evaluation for substances with different types of critical effects. · Access at: http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/existsub/approach/index_e.html
Health Insight	6.6	<p>Health Insight – Taking Charge of Health Information</p> <ul style="list-style-type: none"> · A project of Harvard School of Public Health, Department of Health Policy and Management · Project seeks to help consumers evaluate health and scientific information and consider how the information can be used to improve their lives in the age of risk management. · Information available at: http://www.health-insight.harvard.edu/
National Governors' Association – Homeland Security & Technology	6.7	<p>National Governors' Association Center for Best Practices, Homeland Security & Technology</p> <ul style="list-style-type: none"> · Informs states of best practices in homeland security policy and implementation including bioterrorism, critical infrastructure protection, energy assurance, information sharing, intelligence and emergency management, and government use of information technology. · Information available through: http://www.nga.org/portal/site/nga/menuitem.50aeae5ff70b817ae8ebb856a11010a0

<p><i>OSHA – Fire and Explosion Planning Matrix</i></p>	<p>6.8</p>	<p>This site provides a new homeland security matrix tool.</p> <ul style="list-style-type: none"> · Provides a Fire and Explosion Planning Matrix that will help employers with the planning and preparation for possible workplace emergencies caused by a terrorists' explosive device or an act of arson. OSHA developed the matrix to help employers with planning considerations to reduce vulnerabilities and the consequences of an explosive or act of arson. Within the matrix, OSHA focuses on the FBI definition of terrorism and defines a terrorist act or incident as a "premeditated, unlawful act dangerous to human life that is intended to further political or social objectives." Using the matrix, an employer can evaluate whether the worksite is characterized by any of the following terrorism risk factors: <ul style="list-style-type: none"> - Diseases of Military Concern - Does the location use, handle, store or transport hazardous materials? - Are essential services (e.g. sewer treatment, electricity, fuels, telephone, etc) provided at the location? - Does the site have a high volume of pedestrian traffic? - Is there limited means of egress, such as a high-rise complex or underground operation? - Does the worksite have a high volume of incoming materials (e.g. mail, imports/exports or raw materials)? - Is the location considered a high-profile site, such as a water dam, military installation or classified site? - Is it part of the transportation system, such as shipyard, bus line, trucking, or airline? · If these risk factors apply to your workplace and cannot be eliminated, your vulnerability to a terrorist incident may be greater than that of other workplaces. · The matrix is available at: http://www.osha.gov/dep/fire-expmatrix/index.html
<p><i>Ready</i></p>	<p>6.9</p>	<p>Ready</p> <ul style="list-style-type: none"> · Developed by Department of Homeland Security, provides emergency preparedness resources, including special information for pet owners, senior citizens, and individuals with disabilities and special needs. Ready.gov also provides increased state and local information you can learn about the types of emergencies more likely to occur in your area and the plans that have been established to deal with these emergencies. · Allows communities, businesses, and individuals to obtain information of various types of hazards and threats, prepare for the unexpected, and assess risks. · Information available at: http://www.ready.gov/

<i>RFF</i>	6.10	<p>Resources for the Future Center for Risk Management</p> <ul style="list-style-type: none"> · Carries out a broad program of fundamental research, policy analysis, and outreach related to the management of risks to human health and the environment. · Information available at: http://www.rff.org/Risk.cfm
<i>Risk Analysis</i>	6.11	<p>Society for Risk Analysis</p> <ul style="list-style-type: none"> · An open forum on risk analysis for anyone interested in risk analysis. · Risk World has retained SRA's pre-1997 files on the newsletter and continues to publish the abstracts of papers presented at the society's annual meetings. · Information available at: http://www.riskworld.com/Profsoci/ps5me002.htm and http://www.sra.org/
<i>Risk Analysis Center</i>	6.12	<p>Risk Analysis Center</p> <ul style="list-style-type: none"> · Purpose is to contribute to better public understanding of, and ability to evaluate, risk in everyday life. · Provides access to abstract information about risk articles that appear in the press (leading newspapers are scanned daily) and in scientific, medical and technical journals. · Provides access to risk material from books, papers and technical reports from academic, research and other institutions. · Information available at: http://www.risk-analysis-center.com/(site is free and registration is required).
<i>Risk World</i>	6.13	<ul style="list-style-type: none"> · Web site that provides access to a wide variety of Internet risk resources. · Risk assessment and management section has links to analysis & assessment, risk communication, and risk management resources · Information available at: http://www.riskworld.com/
<i>RSI</i>	6.14	<p>International Life Sciences Institute's Research Foundation Risk Science Institute</p> <ul style="list-style-type: none"> · Works to advance the field of health and environmental risk assessment. · Conducts an international program of research, working groups, conferences and workshops, publications, seminars, and training programs. · Directs investigations of critical scientific issues in risk assessment, with the goal of seeking consensus and communicating findings to the scientific and regulatory communities · Facilitates the development of improved risk assessment methodologies · Provides opportunities for training in risk assessment and related topics · Information available at: http://www.ilsa.org/

<i>RTI</i>	6.15	<p>Research Triangle Institute (RTI)</p> <ul style="list-style-type: none"> · The Environmental Sciences and Engineering research organization develops basic information, regulatory strategies, and new technologies for environmental protection, · Provides environmental measurements, quality assurance, risk assessment, technology assessment, chemical engineering, indoor and outdoor air quality analysis, pollution prevention, and contamination control. · Information available at: http://www.rti.org/
<i>TELLUS Institute</i>	6.16	<ul style="list-style-type: none"> · Non-profit research and consulting organization of scientists, planners, and policy analysts. · Information available at: http://www.tellus.org/
<i>TERA</i>	6.17	<p>Toxicology Excellence for Risk Assessment (TERA) is a nonprofit corporation dedicated to the best use of toxicity data for the development of risk values.</p> <ul style="list-style-type: none"> · Established high quality risk assessment values for public health and the environment through the Verifiable Estimates for Risk Assessment (VERA) program. The VERA program is designed to develop independent, neutral, science-based risk assessment values and characterizations of risks. · Developed the ITER database of human health risk values for over 500 chemicals of environmental concern from several health organizations worldwide. The database is the only on-line source of compiled risk values that provides side-by-side comparisons of values. · Information available at: http://www.tera.org/

TOXNET	6.18	<p>Toxicology Data Network (TOXNET) is a collection of databases on toxicology, hazardous chemicals, environmental health, and toxic releases sponsored by the National Library of Medicine. Databases include:</p> <ul style="list-style-type: none"> · ChemIDplus - Dictionary of over 370,000 chemicals (names, synonyms, and structures). Includes links to NLM and other databases and resources. · Hazardous Substances Data Bank (HSDB) - Comprehensive, peer-reviewed toxicology data for about 5,000 chemicals. · Toxicology Literature Online (TOXLINE) - References from toxicology literature. · Chemical Carcinogenesis Research Information System (CCRIS) - Carcinogenicity and mutagenicity test results for over 8,000 chemicals. · Developmental and Reproductive Toxicology Database (DART) - References to developmental and reproductive toxicology literature. · Genetic Toxicology Data Bank (GENE-TOX) - Peer-reviewed genetic toxicology test data for over 3,000 chemicals. · Integrated Risk Information System (IRIS) - Hazard identification and dose-response assessments for over 500 chemicals. · International Toxicity Estimates for Risk (ITER) - Risk information for over 600 chemicals from authoritative groups worldwide. · Toxics Release Inventory (TRI) - Annual environmental releases of over 600 toxic chemicals by U.S. facilities. · HAZ-Map – Occupational exposure to hazardous agents. · Household products - Health & safety information on household products. <p>· Information available at: http://toxnet.nlm.nih.gov/</p>
USACHPPM – Environmental, Occupational, and Disease Threats	6.19	<p>US Army Center for Health Promotion and Preventive Medicine</p> <ul style="list-style-type: none"> · USACHPPM provides health promotion and preventive medicine leadership and services to identify, assess and counter environmental, occupational, and disease threats to health, fitness, and readiness in support of the National Military Strategy. <ul style="list-style-type: none"> - · Their website has extensive guidance in in clinical and field preventive medicine, environmental and occupational health, health promotion and wellness, epidemiology and disease surveillance, toxicology, and related laboratory sciences. <p>· Information is available at: http://chppm-www.apgea.army.mil/</p>
U.S. EPA - IRIS	6.20	<p>Integrated Risk Information System (IRIS)</p> <ul style="list-style-type: none"> · An EPA database of human health effects that may result from exposure to various substances found in the environment. <p>· Information available at: http://www.epa.gov/iris/</p>

U.S. EPA - NCEA	6.21	<p>EPA's Office of Research and Development's (ORD) National Center for Environmental Assessment (NCEA)</p> <ul style="list-style-type: none"> · Serves as the national resource center for the overall process of human health and ecological risk assessments; the integration of hazard, dose-response, and exposure data and models to produce risk characterizations. · Provides guidance and risk assessments aimed at protecting human health and the environment. The guidance is vetted through a rigorous peer review process, on the risks of pollutants to human health and the natural environment. · Information available at: http://www.epa.gov/ncea/
U.S. EPA - RAF	6.22	<p>EPA's Risk Assessment Forum</p> <ul style="list-style-type: none"> · Standing committee of senior EPA scientists established to promote Agency-wide consensus on difficult and controversial risk assessment issues and to ensure that this consensus is incorporated into appropriate Agency risk assessment guidance. · Risk Assessment Forum products include: risk assessment guidelines, technical panel reports on special risk assessment issues, and peer consultation and peer review workshops addressing controversial risk assessment topics. · Information available at: http://cfpub.epa.gov/ncea/raf/index.cfm
7. Journals		
<i>Environmental Health Perspectives</i>	7.1	<p><i>Environmental Health Perspectives</i>, is published by the National Institute of Environmental Health Sciences, National Institutes of Health</p> <ul style="list-style-type: none"> · Peer-reviewed journal dedicated to the discussion of the effect of the environment on human health. · Information available at: http://ehp.niehs.nih.gov/
<i>Journal of Exposure Science and Environmental Epidemiology (JESEE)</i>	7.2	<p><i>Journal of Exposure Science and Environmental Epidemiology (JESEE)</i> is the official journal of the International Society of Exposure Analysis (ISEA).</p> <ul style="list-style-type: none"> · Peer-reviewed publication that publishes research important to exposure assessment for toxic substances, environmental epidemiology that includes a strong exposure analysis component and related disciplines that advance the exposure assessment process.. · Information available at: http://www.iseaweb.org/journal.php
<i>Risk Analysis</i>	7.3	<p><i>Risk Analysis</i> is the journal of the Society for Risk Analysis.</p> <ul style="list-style-type: none"> · Covers developments in risk analysis for scientists from a wide range of disciplines. · Deals with health risks, engineering, mathematical, and theoretical aspects of risks, and social and psychological aspects of risk such as risk perception, acceptability, economics, and ethics. · Information available at: http://www.sra.org/journal.php

<i>Risk, Decision and Policy</i>	7.4	<p>Risk, Decision, and Policy, Cambridge University Press</p> <ul style="list-style-type: none"> · Published three times a year. · Help decision and risk researchers in statistics, economics, psychology, medicine and public health. · Information is available at: http://journals.cambridge.org/action/displayJournal?jid=RDP
<i>Risk: Health, Safety and the Environment</i>	7.5	<p><i>Risk: Health, Safety & Environment</i>, the official journal of Risk Assessment & Policy Association (RAPA),</p> <ul style="list-style-type: none"> · Refereed, interdisciplinary quarterly exploring public and private efforts to manage science and technology for net reduction in the probability, severity and aversive quality of health, safety and environmental impacts of natural and artificial hazards. · Publication of <i>Risk: Health, Safety & Environment</i>, ceased with the Spring 2002 issue. Publication may resume elsewhere at a later time. · Information available at: http://www.fplc.edu/risk/profrisk.htm <p>(Through vol. 4, Risk: Issues in Health & Safety.)</p>
<i>Risk Management</i>	7.6	<p>Risk Management, Palgrave Macmillan</p> <ul style="list-style-type: none"> · Palgrave Macmillan (United Kingdom) publishes the journal's four issues annually. · Aims to facilitate the exchange of information and expertise across countries and across disciplines. · Purpose is to generate ideas and promote good practice for those involved in the business of managing risk. · Information available at: http://www.palgrave-journals.com/rm/