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For more details: Barzyk T.M., Conlon K.C., Hammond D.M., Chahine T., Zartarian V.G., Schultz B.D., 2009. Tools Available to Communities for Conducting Cumulative Exposure and Risk Assessments. Journal of Exposure Science and Environmental Epidemiology, 1-14.

**Table I. EPA web-based GIS tools that include visual mapping of information contained in EPA databases**

Tool & Web Address	Mapping Features	Databases Accessed
EnviroMapper Storefront <a href="http://www.epa.gov/enviro/html/em">www.epa.gov/enviro/html/em</a> (includes next 10 tools)	Website that houses the following ten tools listed directly below: WME, Regulated Facilities, EJGAT, Brownfields, NPL, TRI, Surface Water Features, Waste Mgt. Facilities, Pesticide Use Limitations, & Cleanups in My Community	Envirofacts Warehouse (see Table 4; Databases)
Window to my Environment <a href="http://www.epa.gov/enviro/wme">www.epa.gov/enviro/wme</a>	Provides a range of federal, state and local information, including regulated facilities, monitoring sites & watershed information, with an interactive map and links to information	Envirofacts Warehouse
EPA-Regulated Facilities <a href="http://www.epa.gov/enviro/html/em">www.epa.gov/enviro/html/em</a>	EPA-regulated facilities with interactive map to display facility name and its multisystem report	Envirofacts Warehouse
Environmental Justice Geographic Assessment Tool (EJGAT) <a href="http://www.epa.gov/compliance/whereyoulive/ejtool.html">www.epa.gov/compliance/whereyoulive/ejtool.html</a>	Environmental information such as regulated facilities, air & water monitors, as well as demographic information such as persons per square mile, per capita income & % below poverty line	Envirofacts Warehouse
Brownfields Grant Types & Properties <a href="http://www.epa.gov/enviro/html/em">www.epa.gov/enviro/html/em</a>	Interactive map to locate, display and query brownfield grant types	Brownfields Database
Superfund National Priorities List (NPL) Sites <a href="http://www.epa.gov/enviro/html/em">www.epa.gov/enviro/html/em</a>	Interactive maps and aerial photography to display and query NPL sites, sites or releases that may require remedial action	National Priorities List
Toxics Release Inventory (TRI) Site Location <a href="http://www.epa.gov/enviro/html/em">www.epa.gov/enviro/html/em</a>	Maps facilities listed in the TRI, which houses emissions information organized by facility and/or chemical	Toxics Release Inventory
Surface Water Features <a href="http://www.epa.gov/enviro/html/em">www.epa.gov/enviro/html/em</a>	Maps features such as impaired and assessed waters, sewage no discharge zones, nonpoint source projects, water quality stations, and water facilities	Multiple databases that link geographic and water quality information. Utilizes National Hydrography Dataset
Waste Management Facility Siting Tool <a href="http://www.epa.gov/enviro/html/em">www.epa.gov/enviro/html/em</a>	Maps of waste management facilities as well as other regulated facilities, such as superfund, toxic releases, water discharge, air emissions, and others	EPA regulated facilities database
Pesticide Use Limitations <a href="http://www.epa.gov/enviro/html/em/index2.html">www.epa.gov/enviro/html/em/index2.html</a>	Displays information about restrictions on using certain pesticides, such as use near source waters	Based on 9th District Court Order
Cleanups in My Community <a href="http://www.epa.gov/enviro/html/em">www.epa.gov/enviro/html/em</a>	Displays information on federally regulated cleanups, including their planned or current status, and provides link to multisystems reports of the cleanup sites	Superfund National Priorities List, RCRA Corrective Action, Brownfields Properties
TRI-NATA Explorer <a href="http://www.epa.gov/nata">www.epa.gov/nata</a>	In development; scheduled for public online availability in Fall 2008. Maps include air toxic concentrations and human health risks (from NATA), as well as emissions information from TRI	National Air Toxics Assessment (NATA) and Toxic Release Inventory (TRI)

<p>TRI Explorer <a href="http://www.epa.gov/triexplorer">www.epa.gov/triexplorer</a></p>	<p>Generates tabular data from TRI by facility or chemical for a specified region, including total or chemical-specific air emissions, surface water discharges, &amp; on- or off-site disposals</p>	<p>Toxics Release Inventory</p>
<p>National Priorities List Mapping Tool <a href="http://www.epa.gov/superfund/sites/npl/npl.htm">www.epa.gov/superfund/sites/npl/npl.htm</a></p>	<p>Interactive maps of NPL sites by EPA Region, which identifies sites or other releases that appear to warrant remedial actions</p>	<p>National Priority Site Listings, CERCLIS</p>
<p>AirNow <a href="http://airnow.gov">http://airnow.gov</a></p>	<p>Website developed by EPA, NOAA, NPS, tribal, state, and local agencies to provide public access to national air quality information including the Air Quality Index (AQI)</p>	<p>Conditions for ozone and particle pollution reported by EPA, NOAA, NPS, news media, tribal, state, and local agencies</p>
<p>Regional Air Impact Modeling Initiative (RAIMI) <a href="http://www.epa.gov/earth/r6/6en/raimi/index.htm">www.epa.gov/earth/r6/6en/raimi/index.htm</a></p>	<p>Evaluates potential for health impacts from multiple sources at the community level; utilizes air models and toxicity assessments for multiple sources to model dispersion, exposure and risk, and outputs results to GIS; relatively technical tool compared to others in this table</p>	<p>Health Effects Assessment Summary Tables (HEAST), Integrated risk information system (IRIS), National Toxics Inventory (NTI), Toxic Release Inventory (TRI), Aerometric Information Retrieval System (AIRS), RCRA Information System, TNRCC Point-Source Database (PSDB), New Source Review Permit Files, Facility files and records, permit applications</p>
<p>Internet Geographical Exposure Modeling System (IGEMS) <a href="http://www.epa.gov/oppt/exposure/pubs/gems.htm">www.epa.gov/oppt/exposure/pubs/gems.htm</a></p>	<p>Currently in development. Requires extensive inputs. Multiple models incorporated into a relatively easy-to-use interface compared to stand-alone counterparts, with interactive selection features and GIS outputs; includes fate &amp; transport models for ambient air, surface and ground water, and soil</p>	<p>Models include ISCLT, ISCST, SESOIL, AT123D, PROUTE, TRIWATER and TRIAIR; census data</p>
<p>National Hydrography Dataset Reach Indexing Tool (NHD-RIT) <a href="http://www.epa.gov/owow/monitoring/georef/RIT.htm">www.epa.gov/owow/monitoring/georef/RIT.htm</a></p>	<p>Interactive GIS application that allows users to georeference surface water data from the NHD</p>	<p>National Hydrography Dataset</p>
<p>Web-Based Reach Indexing for WATERS <a href="http://www.epa.gov/waters/webrit">www.epa.gov/waters/webrit</a></p>	<p>Web-based mapping tool that allows users to provide and update location-specific data for a variety of water programs</p>	<p>WATERS (Watershed Assessment, Tracking &amp; Environmental Results) connects several independent databases related to water quality</p>
<p>Surf Your Watershed <a href="http://cfpub.epa.gov/surf/locate/index.cfm">http://cfpub.epa.gov/surf/locate/index.cfm</a></p>	<p>Watershed information for the specified geographic area, including citizen-based groups involved in the watershed, impaired waters, geologic information, and counties affected</p>	<p>United States Geological Survey (USGS), Total Maximum Daily Loads Reports</p>

**Table 2. EPA guidance documents listed with their intended applications and audiences**

Tool & Web Address	Application	Audience
Air Toxics Risk Assessment Reference Library (ATRA) <a href="http://www.epa.gov/ttn/fera/risk_atra_main.html">www.epa.gov/ttn/fera/risk_atra_main.html</a>	Presents principles of risk-based assessments for air toxics, how to apply them in different settings, and strategies for reducing risk at a local level	Users interested in conducting air toxic analyses at the facility- and community-scale
Air Quality Criteria for Lead <a href="http://oaspub.epa.gov/eims/xmlreport/display?deid=32647&amp;z_chk=2629">http://oaspub.epa.gov/eims/xmlreport/display?deid=32647&amp;z_chk=2629</a>	Informational resource that assesses health and welfare effects associated with exposure to various concentrations of lead in ambient air; includes chapters on chemistry and physics of lead, atmospheric chemistry and dispersion, and health effects	Researchers involved with work pertaining to the Clean Air Act
Asbestos Project Plan <a href="http://www.epa.gov/asbestos/pubs/asbestosprojectplan.pdf">www.epa.gov/asbestos/pubs/asbestosprojectplan.pdf</a>	Framework for coordinated EPA-wide approach to identify, evaluate and reduce human health risks to asbestos exposure	EPA researchers involved with asbestos-related exposure and health assessments
A Citizen's Guide to Radon <a href="http://www.epa.gov/radon/pdfs/citizensguide.pdf">www.epa.gov/radon/pdfs/citizensguide.pdf</a>	Information and EPA-suggested guidelines for ways to reduce human exposure to radon in homes	Homeowners, local business owners, or anyone potentially exposed to radon
Community Air Screening How-To Manual <a href="http://www.epa.gov/oppt/cahp/pubs/howto.htm">www.epa.gov/oppt/cahp/pubs/howto.htm</a>	Step-by-step guide to help communities identify sources of outdoor air pollution, conduct risk-based screening analysis to set priorities, and develop recommendations for taking action	Community groups and residents concerned about improving outdoor air quality
Community-Based Environmental Protection: A resource book for protecting ecosystems and communities <a href="http://www.epa.gov/CARE/library/howto.pdf">www.epa.gov/CARE/library/howto.pdf</a>	Guidance and case study examples about the benefits of a healthy ecosystem to a community, and how recreational, economic and other activities affect the quality of the ecosystem	Community groups interested in ecosystem protection and its potential benefits
Evaluating Exposure to Toxic Air Pollutants: A citizen's guide <a href="http://epa.gov/ttn/atw/3_90_023.html">http://epa.gov/ttn/atw/3_90_023.html</a>	Basic information on the processes of exposure assessments related to toxic air pollutants	Community groups interesting in conducted an exposure assessment relating to toxic air pollutants
Framework For Cumulative Risk Assessment <a href="http://cfpub.epa.gov/ncealcfm/recordisplay.cfm?deid=54944">http://cfpub.epa.gov/ncealcfm/recordisplay.cfm?deid=54944</a>	Provides a flexible structure for conducting and evaluating cumulative risk assessment and for addressing scientific issues related to cumulative risk	Users interested in conducting or evaluating cumulative risk assessments
A Guidebook for Explaining Environmental Regulations to Small Businesses <a href="http://www.epa.gov/ttn/atw/explain.pdf">www.epa.gov/ttn/atw/explain.pdf</a>	Materials to explain environmental standards and rules to small businesses, and presents guidelines on how to explain technical information in layman's terms	Small business owners
Household Hazardous Waste Management: A manual for one-day community collection programs <a href="http://www.epa.gov/epaoswer/non-hw/househd/hhw/cov_toc.pdf">www.epa.gov/epaoswer/non-hw/househd/hhw/cov_toc.pdf</a>	Designed to help communities plan and operate a successful household hazardous waste collection program	Community leaders and household hazardous waste collection program organizers
Naturally Occurring Asbestos: Approaches for Reducing Exposure <a href="http://www.epa.gov/superfund/health/contaminants/asbestos/noa_factsheet.pdf">www.epa.gov/superfund/health/contaminants/asbestos/noa_factsheet.pdf</a>	Overview of approaches for reducing exposure to naturally occurring asbestos	State and local government officials, project managers and environmental professionals

<p>RCRA In Focus Series (RIF)  <a href="http://www.epa.gov/epaoswer/hazwaste/id/infocus/index.htm">www.epa.gov/epaoswer/hazwaste/id/infocus/index.htm</a></p>	<p>Overview of the Resource Conservation and Recovery Act (RCRA) regulations affecting specific industry sources, and a guide to small businesses by relating information focused on recycling and pollution prevention</p>	<p>Business owners and users interested in industry-specific source regulations relating to RCRA</p>
<p>Reducing Air Toxics in Your Community  <a href="http://www.epa.gov/ttn/atw/urban/brochurenewvertical_2004.pdf">www.epa.gov/ttn/atw/urban/brochurenewvertical_2004.pdf</a></p>	<p>Guidance on simple ways to reduce air toxics in a community, and information on EPA programs designed to reduce air toxics</p>	<p>Local community groups, local governments, area residents</p>
<p>Risk Assessment Guidance for Superfund (RAGS)  <a href="http://www.epa.gov/oswer/riskassessment/ragsalindex.htm">www.epa.gov/oswer/riskassessment/ragsalindex.htm</a></p>	<p>Guidance on the human health evaluation activities conducted during the baseline risk assessment, which can be used to determine whether an additional response is necessary at the site</p>	<p>Users familiar with the Superfund program interested in conducting a baseline risk assessment</p>
<p>Risk Assessment Guidelines  <a href="http://cfpub.epa.gov/ncealrafl/recordisplay.cfm?id=55907">http://cfpub.epa.gov/ncealrafl/recordisplay.cfm?id=55907</a></p>	<p>Recommends principles and procedures to guide to assess risks from chemicals or other agents in the environment, and inform decision makers and the public about these procedures</p>	<p>EPA scientists, academic community, local governments and public health officials</p>
<p>Superfund Community Involvement Toolkit  <a href="http://www.epa.gov/superfund/community/toolkit.htm">www.epa.gov/superfund/community/toolkit.htm</a></p>	<p>Promotes successful community participation in the Superfund process, and provides information, sample documents, and suggestions for implementing community involvement activities</p>	<p>Superfund site teams, scientists, and community groups involved in the Superfund process</p>
<p>Watershed Approach Framework  <a href="http://www.epa.gov/owow/watershed/framework/">www.epa.gov/owow/watershed/framework/</a></p>	<p>An explanation of the guiding principles for the EPA watershed approach, as well as their implementation and benefits</p>	<p>Local community groups and governments, and area residents interested in protecting watershed</p>

**Table 3. EPA Databases for environmental information sorted by media**

Database & Web Address	Content	Updates
<b>Multimedia</b>		
Envirofacts Data Warehouse <a href="http://www.epa.gov/enviro/">www.epa.gov/enviro/</a>	Provides access to several EPA databases on environmental activities affecting air, water, and land, including Envirofacts AIRS Facility Subsystem (EF AIRS/AFS), Brownfields Management System (BMS), Biennial Reporting (BR), Comprehensive Environmental Response, Compensation & Liability Information System (CERCLIS), Facility Registry System (FRS), RadNet, Grants Information & Control System (GICS), Information Collection Rule (ICR) data, Locational Reference Tables (LRT), Permit Compliance System (PCS), Resource Conservation and Recovery Act Information (RCRAInfo), Safe Drinking Water Information System (SDWIS), Toxics Release Inventory (TRI)	Each database updated separately
Envirofacts Master Chemical Integrator (EMCI) <a href="http://www.epa.gov/enviro/html/emci">www.epa.gov/enviro/html/emci</a>	Identifies chemicals in the toxic release inventory (TRI), Aerometric Information Retrieval System (AIRS), Permit Compliance System (PCS), and Resource Conservation and Recovery Act Information (RCRAInfo)	Databases updated monthly to annually
Toxic Release Inventory (TRI) <a href="http://www.epa.gov/tri">http://www.epa.gov/tri</a>	Waste management activities reported by industry groups and federal facilities	Annually
Integrated Risk Information System (IRIS) <a href="http://www.epa.gov/iris">www.epa.gov/iris</a>	Toxicity data on chemical substances and pollutants	Annually
ECOTOX <a href="http://www.epa.gov/ecotox">www.epa.gov/ecotox</a>	Chemical toxicity data for aquatic life, terrestrial plants, wildlife	N/A
<b>Air Pollutants</b>		
National-Scale Air Toxics Assessment (NATA) <a href="http://www.epa.gov/ttn/atw/nata">www.epa.gov/ttn/atw/nata</a>	Risk Assessment of 177 toxic air pollutants nationwide, includes estimates of ambient concentrations and exposure, as well as risk characterization	1996; 1999
National Emissions Inventory (NEI) (formerly known as National Toxics Inventory NTI) <a href="http://www.epa.gov/ttn/chieflnet">www.epa.gov/ttn/chieflnet</a>	Information about sources that emit hazardous air pollutants and criteria air pollutants and their precursors	Every three years
Air Quality System (AQS) <a href="http://www.epa.gov/air/data">www.epa.gov/air/data</a>	EPA repository of ambient air quality data from 5000 air monitors with data collected by state, local and tribal agencies	Quarterly
AIRS/AFS: Aerometric Information Retrieval System/AIRS Facility Subsystem <a href="http://earth1.epa.gov/enviro/html/airs">http://earth1.epa.gov/enviro/html/airs</a>	Computer-based repository for information about air pollution from stationary sources	Monthly
Clean Air Markets Data <a href="http://camddataandmaps.epa.gov/gdm">http://camddataandmaps.epa.gov/gdm</a>	Web-based interface to view unit, facility, emissions, and allowance data collected as part of EPA emissions trading programs	Hourly
CASTNET <a href="http://www.epa.gov/castnet">www.epa.gov/castnet</a>	Atmospheric data on the dry deposition component of total acid deposition, ground-level ozone and other forms of atmospheric pollution; 80 monitoring stations nationwide measure weekly average concentrations of acid deposition, hourly concentrations of ambient ozone levels, and meteorological conditions required for calculating dry deposition rates	Hourly

<b>Radiation</b>		
Environmental Radiation Data (RadNet) <a href="http://www.epa.gov/enviro/html/erams">www.epa.gov/enviro/html/erams</a>	National radiation data from air, precipitation, drinking water, and milk samples from a national network of more than 200 monitoring stations	N/A
UV Index <a href="http://epa.gov/sunwise/uvindex.html">http://epa.gov/sunwise/uvindex.html</a>	Solar ultraviolet radiation data from the UV Net database (21 monitoring sites nationally)	N/A
<b>Water</b>		
Safe Drinking Water Information System (SDWIS) <a href="http://www.epa.gov/enviro/html/sdwis">www.epa.gov/enviro/html/sdwis</a>	Reports submitted by states and regions in conformance with the Safe Drinking Water Act	Quarterly
PCS: Permit Compliance System <a href="http://www.epa.gov/enviro/html/pcs">www.epa.gov/enviro/html/pcs</a>	Information on companies which have been issued permits to discharge waste water into rivers	Monthly
National Pollutant Discharge Elimination System (NPDES) <a href="http://cfpub.epa.gov/npdes">http://cfpub.epa.gov/npdes</a>	Facilities that are point sources of water pollution	
STORET Data Warehouse <a href="http://www.epa.gov/storet">www.epa.gov/storet</a>	Biological, chemical, and physical measurements of surface and ground water traits from sites monitored by federal, state and local agencies, tribes, volunteer groups, academics, and others	Monthly
<b>Hazardous Waste</b>		
Brownfields Management System (BMS) <a href="http://www.epa.gov/enviro/html/bms">www.epa.gov/enviro/html/bms</a>	Data on contaminated properties under the EPA Office of Solid Waste Emergency Response Brownfields program	Monthly
RCRAInfo <a href="http://www.epa.gov/enviro/html/rcris">www.epa.gov/enviro/html/rcris</a>	Information about regulated hazardous waste treatment, storage, and disposal facilities, which replaces the National Biennial Hazardous Waste Report (BR) and the Resource Conservation and Recovery Information System (RCRIS)	Monthly extracts
Comprehensive Environmental Response, Compensation & Liability Information System (CIRCLIS Database) <a href="http://www.epa.gov/superfund/sites/cursites">www.epa.gov/superfund/sites/cursites</a>	Envirofacts database of Superfund site names, locations, and remedial actions	Monthly
<b>Compliance Data</b>		
Integrated Data for Enforcement Analysis (IDEA) IDEA search engine has two different Web interfaces available to users: OTIS (for government access) and ECHO (for public access)	Environmental performance data on EPA-regulated facilities that maintains copies of EPA air, water, hazardous waste and enforcement source data systems	Monthly
Enforcement & Compliance History Online (ECHO) <a href="http://www.epa-echo.gov/echo">www.epa-echo.gov/echo</a>	Compliance and violation records for air, water, and hazardous waste facilities	Monthly
Locational Reference Tables (LRT) <a href="http://www.epa.gov/enviro/html/locational/lrt">www.epa.gov/enviro/html/locational/lrt</a>	Locational information for EPA-regulated facilities in Envirofacts	Monthly
Facility Registry System (FRS) <a href="http://www.epa.gov/frs">www.epa.gov/frs</a>	Internet access to an integrated source of comprehensive (air, water, and waste) environmental information about facilities, sites or places, that includes information from the EPA Central Data Exchange registrations and data management personnel, state master records, and EPA databases	Nightly

Integrated Compliance Information System (ICIS) <a href="http://www.epa.gov/compliance/data/systems/modernization/index.html">www.epa.gov/compliance/data/systems/modernization/index.html</a>	Integrated enforcement and compliance information on facilities from all EPA Enforcement Cases and EPA Supplemental Environmental Projects (SEPs) covering all environmental media	Real-time data entry & retrieval
<b>Other</b>		
Environmental Information Management System (EIMS) <a href="http://www.epa.gov/eims">www.epa.gov/eims</a>	Library of projects, data sets, models, and documents related to the Regional Vulnerability Assessment (ReVA) program	
Grants Information and Control System (GICS) <a href="http://www.epa.gov/enviro/html/gics">www.epa.gov/enviro/html/gics</a>	Contains information about EPA-awarded grants	Bi-weekly
VendInfo <a href="http://es.epa.gov/vendors/">http://es.epa.gov/vendors/</a>	Listings of pollution prevention equipment, products and services from company and technology listings	User-Driven



**Table 4. EPA-developed exposure models**

Model	Objective	Inputs	Outputs	Availability
Total Risk Integrated Methodology (Exposure-event module)/Air Pollutants Exposure Model (TRIM.Expo-APEX)	Inhalation exposure for census tract or larger area	Hourly air pollution concentrations at location, max daily temp	Air pollutant exposure	<a href="http://www.epa.gov/ttnmain1/fera/human_apex.html">http://www.epa.gov/ttnmain1/fera/human_apex.html</a>
Human Exposure Model-3 (HEM-3)	Inhalation exposure for census tract or larger area	Emission rates, emission source configurations and locations	Outdoor air concentration, air pollutant exposure, cancer risk (inhalation), Target Organ Specific Hazard Index (inhalation)	<a href="http://www.epa.gov/ttn/fera/hem_download.html">http://www.epa.gov/ttn/fera/hem_download.html</a>
Human Exposure Model – Screening Level Analysis (HEM-Screen)	Screening-level exposure for census block or larger area	Emission rates, emission source locations, pollutant unit risk factors	Outdoor air concentration, air pollutant exposure, cancer risk (inhalation), Target Organ Specific Hazard Index (inhalation)	<a href="http://www.epa.gov/ttn/fera/hem_download.html">http://www.epa.gov/ttn/fera/hem_download.html</a>
Hazardous Air Pollutant Exposure Model (HAPEM)	Inhalation exposure for census block or larger area	Annual, seasonal & monthly air pollutant concentrations at census tract or block level	Human exposure concentrations	<a href="http://www.epa.gov/ttn/fera/human_hapem.html">http://www.epa.gov/ttn/fera/human_hapem.html</a>
Chemical Screening Tool For Exposures & Environmental Releases (ChemSTEER)	Occupational exposure (inhalation and dermal) and environmental releases during industrial and commercial uses	Information on the worker activities and default parameters	Release amount in Kg/day and exposure dose rate in mg/day	<a href="http://www.epa.gov/oppt/exposure/pubs/chemsteer.htm">http://www.epa.gov/oppt/exposure/pubs/chemsteer.htm</a>
Exposure Analysis Modeling System (EXAMS)	Exposure to synthetic organic chemicals in a water body	Pollutant chemical properties and reaction rates	Surface water concentrations	<a href="http://www.epa.gov/ceampubl/swater/exams/exams2980406.htm">http://www.epa.gov/ceampubl/swater/exams/exams2980406.htm</a>
Exposure and Fate Assessment Screening Tool (E-FAST)	Consumer products exposure assessment	Media of release, days per year of release	Potential inhalation, dermal, and ingestion dose rates resulting from chemicals released from consumer products	<a href="http://www.epa.gov/oppt/exposure/pubs/efast.htm">http://www.epa.gov/oppt/exposure/pubs/efast.htm</a>
Multi-Chamber Concentration and Exposure Model (MCCEM)	Inhalation exposure to chemicals released from residential products or materials in rooms within a residence, school or office	Type of residence, zone volumes, interzonal air flow rates, and air exchange rates	Air concentrations and inhalation exposure for one chemical in up to four zones (rooms) of a residence	<a href="http://www.epa.gov/oppt/exposure/pubs/mccem.htm">http://www.epa.gov/oppt/exposure/pubs/mccem.htm</a>

Dietary Exposure Potential Model (DEPM)	Dietary exposure to pesticides and environmental contaminants	Food information; chemicals; population information	Chemical residues found in diet for each cohort group in mg/kg body weight per day	<a href="http://www.epa.gov/nerlcww/w/depm.htm">http://www.epa.gov/nerlcww/w/depm.htm</a>
Stochastic Human Exposure and Dose Simulation Model for Particulate Matter (PM) (SHEDS-PM)	PM exposure assessment that can isolate home, vehicle, building, & outdoor exposure	Population cohort(s); Ambient PM concentrations	Human exposures, intake doses	In development – model has been peer-reviewed – beta version available from Janet Burke (burke.janet@epa.gov)
Stochastic Human Exposure and Dose Simulation Model for Multimedia, Multipathway Chemicals (SHEDS-MM)	Exposure estimates for residential indoors/outdoors & national population estimates for inputs to risk assessments	Population cohort(s); input probability distributions; chemical application scenarios (optional)	Human exposures, intake doses	<a href="http://www.epa.gov/scipoly/sap/meetings/2007/081407_mtg.htm">http://www.epa.gov/scipoly/sap/meetings/2007/081407_mtg.htm</a> (model located under meeting materials)
Stochastic Human Exposure and Dose Simulation Model for the Wood Preservative Exposure Scenario (SHEDS-Wood)	Chromated Copper Arsenate (CCA) exposure assessment for outdoor playgrounds for an individual & national population estimates	Population cohort(s); input probability distributions	Human exposures, intake doses	<a href="http://www.epa.gov/scipoly/sap/meetings/2003/120303_mtg.htm">http://www.epa.gov/scipoly/sap/meetings/2003/120303_mtg.htm</a> (model located under meeting materials)
Stochastic Human Exposure and Dose Simulation Model for Air Toxics (AT) (SHEDS-AT)	Human exposure assessment from air toxics that can isolate home, vehicle, building and outdoor exposure	Hourly air concentrations	Human exposures, intake doses	In development – model has been peer-reviewed – beta version available from Janet Burke (burke.janet@epa.gov)

**Table 5. Example of screening measurement methods: Example of commercially available test kits (Mention of trade names or commercial products does not constitute endorsement or recommendation of use.)**

Analyte(s)	Estimated Price Range	Brand	Source
<b>Indoor Air</b>			
Mold and Bacteria Formaldehyde, Nitrogen Dioxide, Carbon Monoxide and Carbon Dioxide	\$ 69.95 for one; \$109.95 for two	EnviroCheck	<a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/EnviroCheck_Indoor_Air_Quality_Test_Kit.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/EnviroCheck_Indoor_Air_Quality_Test_Kit.asp</a>
Ozone	\$14.95	Eco Badge® Ozone Detector Kit	<a href="http://ecobadge.com/Merchant5/merchant.mvc?Screen=SFNT&amp;Store_Code=ecobadge">http://ecobadge.com/Merchant5/merchant.mvc?Screen=SFNT&amp;Store_Code=ecobadge</a> or <a href="http://www.negativeiongenerators.com/ozonedetector.html">http://www.negativeiongenerators.com/ozonedetector.html</a> or <a href="http://www.airpurifiersbestonline.com/site/1406502/product/Eco%20Badge%20Ozone%20Test%20Kit">http://www.airpurifiersbestonline.com/site/1406502/product/Eco%20Badge%20Ozone%20Test%20Kit</a> or <a href="http://www.honest-air-online.com/site/948704/product/HA-06-TK-2">http://www.honest-air-online.com/site/948704/product/HA-06-TK-2</a> or <a href="http://www.air-zone.com/detector.html">http://www.air-zone.com/detector.html</a>
Toxic black mold, bacteria, and yeast	\$19.95	Enviro-Tester	<a href="http://www.envirotester.com/">http://www.envirotester.com/</a>
Mold Spores Bacteria Fungus	\$13.95 per set	Comtech Research	<a href="http://www.vgdllc.com/dishes.htm">http://www.vgdllc.com/dishes.htm</a>
<b>Water</b>			
Phosphate Chlorine Ammonia Nitrogen Chloride	50 tests, \$71.90 50 tests, \$ 61.20 50 tests, \$48.50 50 for \$39.50	LaMotte	<a href="http://www.lamotte.com/pages/common/pdf/instruct/3590-02.pdf">http://www.lamotte.com/pages/common/pdf/instruct/3590-02.pdf</a> or <a href="http://www.benmeadows.com/search/LaMotte/9061/">http://www.benmeadows.com/search/LaMotte/9061/</a> or <a href="http://www.benmeadows.com/search/LaMotte/21495/">http://www.benmeadows.com/search/LaMotte/21495/</a>
Bacteria Atrazine & Simazine Nitrate & Nitrite Iron, Chlorine Copper ,Lead	\$ 33.95 to 35.95	PurTest Home Water Analysis Test Kit	<a href="http://www.purtest.com/">http://www.purtest.com/</a> or <a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/PurTest_Home_Water_Analysis_Test_Kit.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/PurTest_Home_Water_Analysis_Test_Kit.asp</a> or <a href="https://www.freshwatersystems.com/p-455-purtest-complete-home-water-test-kit.aspx?affiliateid=10050&amp;qid=0">https://www.freshwatersystems.com/p-455-purtest-complete-home-water-test-kit.aspx?affiliateid=10050&amp;qid=0</a>
Bacteria Free Chlorine Nitrate, Nitrite Total Chlorine Iron Copper Sulfate Chloride Hydrogen Sulfide	\$24.45	ITS Complete Water Analysis Test Kit	<a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/Industrial_Test_Systems_Complete_Water_Test_Kit.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/Industrial_Test_Systems_Complete_Water_Test_Kit.asp</a> or <a href="http://www.testing-kits.com/list-testing-kits.asp?txtsearchParamTxt=alkalinity&amp;txtsearchParamType=ALL&amp;txtsearchParamCat=9&amp;txtsearchParamMan=ALL&amp;txtsearchParamVen=ALL">http://www.testing-kits.com/list-testing-kits.asp?txtsearchParamTxt=alkalinity&amp;txtsearchParamType=ALL&amp;txtsearchParamCat=9&amp;txtsearchParamMan=ALL&amp;txtsearchParamVen=ALL</a>
Bacteria Lead Atrazine & Simazine Nitrate Nitrite	\$19.95	Watersafe All- In-One Water Analysis Test Kit	<a href="http://www.discovertesting.com/?source=googleCPC&amp;s_cid=299566559&amp;gclid=CPO7pvadpplCFQTWsgod7kCRRg">http://www.discovertesting.com/?source=googleCPC&amp;s_cid=299566559&amp;gclid=CPO7pvadpplCFQTWsgod7kCRRg</a> or <a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/Watersafe_All_In_One_Water_Test_Kit.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/Watersafe_All_In_One_Water_Test_Kit.asp</a>

Chlorine			
Lead	\$9.95	Watersafe Lead Water Analysis Test Kit	<a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/Watersafe_Lead_Water_Test_Kit.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/Watersafe_Lead_Water_Test_Kit.asp</a>
Bacteria Ammonia Nitrate/Nitrite	\$9.45	ITS Water Analysis Test Kit	<a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/Industrial_Test_Systems_Bacteria_Nitrate_Nitrite_Water_Test_Kit.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/Industrial_Test_Systems_Bacteria_Nitrate_Nitrite_Water_Test_Kit.asp</a>
Arsenic	\$25.95 for 2 arsenic tests	ITS Arsenic Water Analysis Test Kit	<a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/Industrial_Test_Systems_Arsenic_Water_Test_Kit.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/Industrial_Test_Systems_Arsenic_Water_Test_Kit.asp</a>
<b>Drinking/Tap Water</b>			
bacteria, nitrites, and nitrates	\$14.95-\$19.95	PurTest Drinking Water Test Kit	<a href="http://www.purtest.com/">http://www.purtest.com/</a>
Trihalomethanes	\$ 449 for 100 tests	Hach	<a href="http://www.hach.com">http://www.hach.com</a>
Bacteria, atrazine & simazine; nitrate, nitrite iron chlorine copper lead	\$29.95*- \$59.95	PurTest Complete Water Test Kit	<a href="http://www.purtest.com/">http://www.purtest.com/</a> or <a href="http://www.air-n-water.com/search.aspx?q=PurTest&amp;Submit =Search">http://www.air-n-water.com/search.aspx?q=PurTest&amp;Submit =Search</a> or <a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/PurTest_Home_Water_Analysis_Test_Kit.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/PurTest_Home_Water_Analysis_Test_Kit.asp</a>
<b>Surfaces</b>			
Mold	5 tests : \$34.95 10 tests: \$44.95 15 tests: \$54.95	MoldCheck™ Mold Test Kits	<a href="http://www.moldcheck.com/MoldCheckProveltp.php">http://www.moldcheck.com/MoldCheckProveltp.php</a>
Lead	8 tests:\$18.45 16 tests:\$34.95	Lead Check Swab Tests	<a href="http://www.leadcheck.com/">http://www.leadcheck.com/</a> or <a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/Lead_Paint_Testing.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/Lead_Paint_Testing.asp</a>
Lead	\$27.95- 29.95, add \$4.50 for shipping.	Lead Detective Test	<a href="http://www.theleaddetective.com/">http://www.theleaddetective.com/</a> or <a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/Lead_Paint_Testing.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/Lead_Paint_Testing.asp</a>

**Table 6. Example of quantitative screening methods: Instrument or laboratory analysis (Mention of trade names or commercial products does not constitute endorsement or recommendation of use)**

Analyte(s)	Estimated Price Range	Brand	Source
<b>Indoor Air</b>			
Ozone	\$ 299- 329.99 + shipping; Monitor for ambient ozone detection. 0.02-0.14 PPM range. LED Readout.	Ambient Ozone Sensor	<a href="http://www.ozonesupplies.com/EZ-1X.html?gclid=CjXHWqr9pZICFR_bQAod-zloNQ">http://www.ozonesupplies.com/EZ-1X.html?gclid=CjXHWqr9pZICFR_bQAod-zloNQ</a> or <a href="http://www.air-zone.com/detector.html">http://www.air-zone.com/detector.html</a>
Mold	Test & lab fees price: 5 tests: \$34.95, 10 tests: \$44.95, 15 tests: \$54.95	MoldCheck™ Mold Test Kits	<a href="http://www.exit15.com/mold-check-airborne-sampling-kit-wlab-fees-p-1017.html">http://www.exit15.com/mold-check-airborne-sampling-kit-wlab-fees-p-1017.html</a>
20 types of mold spores, pollen and dust	2 sets & lab fees- \$149.00	Air Check Home Mold Testing Kit	<a href="http://www.homemoldtestkit.com/store/index.php?main_page=product_info&amp;products_id=5">http://www.homemoldtestkit.com/store/index.php?main_page=product_info&amp;products_id=5</a>
mold and mildew	Test & lab fees: \$ 99.95	Mold screening kit	<a href="http://www.moldscreeningkit.com/moldkit.php">http://www.moldscreeningkit.com/moldkit.php</a>
Allergens Fungi Formaldehyde	\$375.00 for the evalu-aire® Screen Test Kit	evalu-aire® Test Kits	<a href="http://www.pureaircontrols.com/ieqform.html">http://www.pureaircontrols.com/ieqform.html</a> or <a href="http://www.airpurifiersforhome.com/products/test_kits.htm">http://www.airpurifiersforhome.com/products/test_kits.htm</a>
Radon	One test: \$ 9.95 3 tests: \$ 24.99 Includes lab fees	AirCheck test kits	<a href="https://securechek.com/DIY/index.html">https://securechek.com/DIY/index.html</a>
Mold Spores Test Dander Test Carcinogenic Fibers Pollen Test Bacteria Test	Fee includes lab analysis for each separate test (add ons). Basic Home Quality Kit (dust & dust mites): \$30 Add-mold:\$45 Add-dander: \$45 Add-carcinogenic fibers (fiberglass, asbestos): \$33 Add-pollen: \$ 35 Add-bacteria: \$99	Green Nest Home Air Quality Tests	<a href="http://www.greennest.com/air-quality-test-kit.html">http://www.greennest.com/air-quality-test-kit.html</a>
Radon	Test & lab fee:	AccuStar	<a href="http://www.accustarlabs.com/">http://www.accustarlabs.com/</a>

	\$ 13.95	Short-Term Activated Charcoal (AC) Radon in Air Test Kit	
<b>Water</b>			
Ammonia Nitrogen, Calcium, Magnesium, Free CarbonDioxide, Chloride,ChlorineChromium(Chromate), Copper, Cyanide, Iron, Nitrate, Phosphorus (Phosphate), Sulfide	Several Instrumentation options ranging from \$164.35-\$234.50 and  Model AM-22 Water Pollution Field Detection Kit  \$516	LaMotte	<a href="http://www.lamotte.com/pages/common/pdf/instruct/5905-01.pdf">http://www.lamotte.com/pages/common/pdf/instruct/5905-01.pdf</a> or <a href="http://www.benmeadows.com/search/LaMotte/21053/">http://www.benmeadows.com/search/LaMotte/21053/</a>
Option 1: total Coliform and E.Coli bacteria, 17 heavy metals, 5 inorganic chemicals, 5 physical factors, 4 trihalomethanes, and 44 volatile organic chemicals  Pesticide Option includes all of the standard tests, plus 20 additional organic chemicals for pesticides, herbicides and PCB's	Watercheck Test Price: \$122.95 Watercheck with Pesticide Option Test -Price: \$152.95 ; (Lab analysis included)	WaterCheck Water Quality Tests	<a href="http://www.ntllabs.com/businesses/watertreatment/products.html">http://www.ntllabs.com/businesses/watertreatment/products.html</a> or <a href="http://www.watercheck.biz/">http://www.watercheck.biz/</a> or <a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/Watercheck_Water_Quality_Test_Kit.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/Watercheck_Water_Quality_Test_Kit.asp</a>
Radon	\$27.95 (lab included)	AccuStar Radon in Water Test	<a href="http://www.accustarlabs.com/">http://www.accustarlabs.com/</a> or <a href="http://www.healthgoods.com/Shopping/Home_Test_Kits/Accustar_Radon_Gas_Water_Test_Kit.asp">http://www.healthgoods.com/Shopping/Home_Test_Kits/Accustar_Radon_Gas_Water_Test_Kit.asp</a>
<b>Drinking water/Tap water</b>			
Radon	\$27.95 (lab included)	AccuStar Radon in Water Test	<a href="http://www.accustarlabs.com/">http://www.accustarlabs.com/</a>
Trihalomethanes	\$3012 for portable spectrophotometer	Hach	<a href="http://www.hach.com">http://www.hach.com</a>
Free & total chlorine	\$352 pocket colorimeter	Hach	<a href="http://www.hach.com">http://www.hach.com</a>

**Surfaces**

mold	Mold testing lab Price depends on sample & sampling media- Tape= \$50; Air= \$60, Bulk=\$100.00, e.g. 4 sq.in. of drywall, 1 sq.ft. of mold-suspect fiberglass	InspectApedia	<a href="http://www.inspect-ny.com/sickhouse/bulksamp.htm">http://www.inspect-ny.com/sickhouse/bulksamp.htm</a>
Asbestos	\$20- \$37.99, Lab Fees & Shipping Included	Professional Asbestos Testing kit	<a href="http://prolabinc.com/instructions/asbestos.html">http://prolabinc.com/instructions/asbestos.html</a> or <a href="http://www.kaboodle.com/reviews/professional-asbestos-test-kit-as108">http://www.kaboodle.com/reviews/professional-asbestos-test-kit-as108</a>

**Table 7. EPA and other federal measurement methods tools**

Source	Description	Web address
<b>EPA Information</b>		
EPA Method Collections	Forum of Environmental Measurements Provides contact information & methods related to: Air and Radiation; Solid Waste and Emergency Response; Sampling Methods; Water; Prevention, Pesticides, and Toxic Substances; Research and Development; Analytical and Sampling Method Sources	<a href="http://www.epa.gov/OSA/fem/methcollectns.htm">http://www.epa.gov/OSA/fem/methcollectns.htm</a>
Manual of Manuals	Quick cross-reference of EPA methods by analyte	<a href="http://www.epa.gov/nerlcwww/methmans.html">http://www.epa.gov/nerlcwww/methmans.html</a>
EPA Technology Transfer Network, Ambient Monitoring Technology Information Center	Monitoring Programs, Monitoring methods, Documents and articles, Trends & Non-attainment, Regulations	<a href="http://www.epa.gov/ttnamti/">http://www.epa.gov/ttnamti/</a>
EPA Emissions Measurement Center Air	Emission Measurement Center (EMC) provides searchable information on test methods for measuring pollutants from smokestacks and other industrial sources. This site compiles the test methods available for emission measurement, and EMC staff provides technical assistance in the use and application of the methods.	<a href="http://www.epa.gov/ttn/emc/">http://www.epa.gov/ttn/emc/</a>
Air EPA Technology Transfer Network: Ambient Monitoring Technology Information Center	Operated by EPA's Ambient Air Monitoring Group (AAMG). Information on ambient air quality monitoring programs, monitoring methods, relevant documents, air quality trends and nonattainment areas, and federal regulations related to ambient air quality monitoring	<a href="http://www.epa.gov/ttn/amtic/">http://www.epa.gov/ttn/amtic/</a>
EPA Clean Water Act Analytical Test Methods	Analytical methods that are approved not promulgated methods, alternative methods, updated methods.	<a href="http://www.epa.gov/waterscience/methods/">http://www.epa.gov/waterscience/methods/</a>
Safe Drinking Water Act Analytical Methods and Laboratory Certification	Information on approved analytical methods, drinking water programs and laboratory certification.	<a href="http://www.epa.gov/safewater/methods/">http://www.epa.gov/safewater/methods/</a>
EPA Microbiology Home	EPA methods and information related to	<a href="http://www.epa.gov/nerlcwww/">http://www.epa.gov/nerlcwww/</a>



page	bacteria, viruses and protozoans.	
ORD methods for water	Drinking and Marine water methods	<a href="http://www.epa.gov/nerlcwww/ordmeth.htm#marine">http://www.epa.gov/nerlcwww/ordmeth.htm#marine</a>
Whole Effluent Toxicity (WET) Page	Methods for measuring acute toxicity and short term chronic toxicity to freshwater and marine organisms, guidance documents and regulatory actions	<a href="http://www.epa.gov/waterscience/methods/wet/">http://www.epa.gov/waterscience/methods/wet/</a>
Analytical Methods Developed by the Office of Ground Water and Drinking Water	Chemical methods for the determination of organic chemicals in drinking water.	<a href="http://www.epa.gov/safewater/methods/analyticalmethods_ogwdw.html">http://www.epa.gov/safewater/methods/analyticalmethods_ogwdw.html</a>
EPA Office of Solid Waste Test Methods	Information and guidance on analytical chemistry, testing methodologies, environmental sampling and monitoring, and quality assurance in support RCRA. SW-846 methods.	<a href="http://www.epa.gov/epaoswer/hazwaste/test/">http://www.epa.gov/epaoswer/hazwaste/test/</a>
New Test Methods On-line	new SW-846 methods are intended to be guidance methods which contain general information on how to perform an analytical procedure or technique which a laboratory can use as a basic starting point for generating its own detailed Standard Operating Procedure (SOP)	<a href="http://www.epa.gov/epaoswer/hazwaste/test/new-meth.htm">http://www.epa.gov/epaoswer/hazwaste/test/new-meth.htm</a>
Superfund Analytical Services / Contract Laboratory Program	Provides information on EPA's Superfund Analytical Services/Contract Laboratory Program (CLP). Provides guidance, analyses, cost for the analyses, tools, and contacts.	<a href="http://www.epa.gov/oerrpage/superfund/programs/clp/index.htm">http://www.epa.gov/oerrpage/superfund/programs/clp/index.htm</a>
EPA Corrective Action Guidance Page	Guidance related to RCRA (e.g. regulated hazardous waste). Provides monitoring methods for groundwater & soil screening	<a href="http://www.epa.gov/epaoswer/hazwaste/ca/guidance.htm">http://www.epa.gov/epaoswer/hazwaste/ca/guidance.htm</a>
<b>Other Federal Information</b>		
National Environmental Methods Index (NEMI) (includes EPA, USGS, NOAA and other partners)	Searchable methods database for regulatory and non-regulatory monitoring of water, sediment, air and tissues. User can compare the capabilities and relative costs of the methods.	<a href="http://www.nemi.gov/">http://www.nemi.gov/</a>
NIOSH Manual of Analytical Methods (NMAM)	Searchable database provides methods for sampling and analysis of contaminants in workplace air, and blood and urine of exposed workers. Can search by	<a href="http://www.cdc.gov/niosh/nmam/">http://www.cdc.gov/niosh/nmam/</a>

	chemical, CAS number, or method number	
Agency for Toxic Substances and Disease Registry (ASTDR)	Toxicological Profiles of specific chemicals which includes a link to the analytical method.	<a href="http://www.atsdr.cdc.gov/toxpro2.html">http://www.atsdr.cdc.gov/toxpro2.html</a>
US Department of Labor, Occupational Safety & Health Administration	Searchable database for Sampling and Analytical Methods by analyte	<a href="http://www.osha.gov/dts/sltc/methods/toc.html">http://www.osha.gov/dts/sltc/methods/toc.html</a>