Measures and Data Sources for Environmental Public Health Indicators

Air, Ambient (Outdoor)

Indicator	*Suggested Measure*	*Potential Data Source*
Hazards		
Criteria pollutants in ambient air *(core)*	1) Annual high levels of criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), PM_{10}, sulfur dioxide (SO_2) *(core)* 2) Tons of criteria pollutants released in ambient air *(core)*	**EPA:** National Air Quality and Emissions Trends Report; NMMAPS, NTI; NEI; Urban Air Toxics Program; TRI/EPCRA; AIRS **States or local jurisdictions:** environmental protection agencies, especially those with indicator projects; Urban Air Toxics Programs
Hazardous or toxic substances in ambient air *(core)*	1) Tons of one or more hazardous or toxic substances released in ambient air *(core)* 2) Number of reports of noncompliance for emissions releases *(developmental)*	**ATSDR:** HSEES **EPA:** National Air Quality and Emissions Trends Report; NMMAPS, NTI; NEI; TRI/EPCRA; AIRS **NOAA (NWS)** **States or local jurisdictions:** environmental protection agencies, especially those with indicator projects; Urban Air Toxics Programs
Motor vehicle emissions *(core)*	1) Vehicle miles driven per capita *(core)* 2) Average fuel efficiency of registered motor vehicles *(optional)*	**CB:** census data **DOE (EIA)** **DOT, FHA:** NPTS
Residence in non-attainment areas *(core)*	1) Percentage of human population residing in non-attainment areas (for criteria air pollutants) *(core)*	**CB:** census data **EPA:** National Air Quality and Emissions Trends Report, NMMAPS
Exposures		
(None identified)		
Health Effects		
Unusual pattern of asthma events *(core)*	1) Number of asthma-related deaths *(core)* 2) Incidence of asthma *(core)* 3) Rates of hospitalization and emergency department visits for acute asthma events *(core)* 4) Number of work days missed because of asthma *(optional)* 5) Number of school days missed because of asthma *(optional)* 6) Proportion of population filling prescriptions for asthma medication *(developmental)*	**CDC:** NHAMCS, NHDS, NVSS **States or local jurisdictions:** CDI surveillance; ME/Cs; vital statistics
Unusual pattern of cardiovascular or respiratory events *(core)*	1) Incidence of cardiovascular and respiratory events *(core)* 2) Rates of hospitalization and emergency department visits for acute cardiovascular and respiratory events *(core)*	**CDC:** NHAMCS, NHDS, NVSS **States or local jurisdictions:** CDI surveillance; vital statistics

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Air, Ambient (Outdoor)

Indicator	*Suggested Measure*	*Potential Data Source*
Interventions		
Programs that address motor vehicle emissions *(core)*	1) Proportion of population residing in jurisdictions that have vehicle emissions mandates *(core)* 2) Number of public education messages to encourage the use of personal transportation alternatives (e.g., ("ozone action day") *(optional)*	**CB:** census data **DOT (FHA):** NPTS **States or local jurisdictions:** environmental protection and transportation agencies, especially those with indicator projects
Alternate fuel use in registered motor vehicles *(core)*	1) Proportion of registered vehicles powered by alternative fuel *(core)*	**DOE (EIA)** **States or local jurisdictions:** transportation agencies
Availability of mass transit *(core)*	1) Proportion of population for whom mass transit is available *(core)* 2) Proportion of population who chose personal transportation alternatives (e.g., walking, bicycling) *(optional)*	**CB:** census data **CDC:** BRFSS; NHIS **DOT (FHA):** National Bicycle and Walking Study; NPTS **States or local jurisdictions:** CDI surveillance; transportation agencies
Programs that address hazardous or toxic substances in ambient air *(optional)*	1) Number of jurisdictions that have air toxics monitoring programs *(optional)* 2) Number of operating permits for releases of hazardous air pollutants *(optional)* 3) Number of fines for hazardous releases violations *(optional)*	**EPA** **States or local jurisdictions:** environmental protection agencies

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Air, Indoor

Indicator	*Suggested Measure*	*Potential Data Source*
Hazards		
Tobacco smoke in homes with children *(core)*	1) Proportion of children residing in households with adult smokers *(core)* 2) Proportion of households with adult smokers *(core)* 3) Proportion of children who smoke *(optional)*	**CB:** census data **CDC:** BRFSS; NHIS; YRBSS **EPA** **American Legacy Foundation** **States or local jurisdictions:** CDI surveillance environmental protection agencies, especially those with indicator projects
Hazardous or toxic substances in indoor air *(optional)*	1) Proportion of houses with group I dust mite in beds *(optional)* 2) Proportion of houses with >0.1 unit/g German cockroach dust in beds *(optional)* 3) Proportion of schools with indoor air hazards *(developmental)*	**CDC** **HUD:** National Survey of Lead and Allergens in Housing **NIEHS**
Exposures		
(None identified)		
Health Effects		
CO poisoning (not fire-related) *(core)*	1) Number of deaths from CO poisoning *(core)* 2) Number of hospitalizations and emergency department visits attributed to CO exposure *(core)*	**CDC:** NHAMCS; NHDS; NVSS **States or local jurisdictions:** injury and CDI surveillance; hospital discharge data; ME/Cs; vital statistics
Unusual pattern of respiratory events *(optional)*	1) Number of emergency department visits in which an air-borne agent is suspected *(optional)* 2) Number of deaths in which an air-borne agent is suspected *(optional)*	**CDC:** NHAMCS; NHDS; NVSS **States or local jurisdictions:** CDI surveillance; ME/Cs; vital statistics
Interventions		
Policies that address indoor air hazards in schools *(core)*	1) Proportion of schools with indoor air policies *(core)* 2) Proportion of schools with smoke-free and tobacco-free policies *(core)*	**CDC:** NHIS; SHPPS; YRBSS **EPA** **States or local jurisdictions:** CDI surveillance; STATE
Laws pertaining to smoke-free indoor air *(core)*	1) Number of jurisdictions with laws on smoke-free indoor air *(core)* 2) Proportion of resident population in jurisdictions with laws pertaining to smoke-free indoor air *(core)*	**CB:** census data **CDC, NIOSH** **States or local jurisdictions:** STATE; health agencies, occupational safety and health divisions
Indoor air inspections *(core)*	1) Number of complaint-related indoor air inspections *(core)*	**CDC (NIOSH)** **OSHA**
Use of best practices for protecting indoor air *(optional)*	1) Number of local jurisdictions with ordinances requiring CO detectors in apartment buildings *(optional)* 2) Proportion of non-manufacturing work force that occupies office buildings for which indoor air quality management practices address human health *(optional)* 3) Proportion of resident population for which programs are available for testing radon in high-risk homes *(optional)*	**CDC:** NHIS, NIOSH surveillance systems **EPA** **OSHA:** health agencies, occupational safety and health divisions **States or local jurisdictions:** health agencies, occupational safety and health divisions; local OSHA; STATE

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Disasters

Indicator	*Suggested Measure*	*Potential Data Source*
Hazards		
Residence in a flood plain *(core)*	1) Proportion of resident population with homes in a flood plain *(core)*	**CB:** census data **FEMA** **USGS**
Geographic or climatic conditions that increase susceptibility to hazards *(optional)*	1) Number of days in which temperatures exceed safe thresholds *(optional)* 2) Amount of excessive rainfall *(optional)* 3) Duration of drought conditions *(developmental)* 4) Number of days of flooding *(developmental)* 5) Number of floods in areas with high concentrations of pesticide through production, sales, or use *(developmental)*	**FEMA** **NOAA** **USDA** **USGS** **States or local jurisdictions:** agriculture and environmental protection agencies, especially those with indicator projects
Residence in a temporary or unsafe structure *(optional)*	1) Proportion of population residing in damaged or destroyed home *(optional)* 2) Proportion of population residing in temporary shelter *(optional)*	**ARC** **CB:** census data **CDC** **FEMA** **States or local jurisdictions**
Exposures		
(None identified)		
Health Effects		
Deaths attributed to extremes in ambient temperature *(core)*	1) Number of heat-attributed deaths *(core)* 2) Number of deaths from hypothermia *(optional)*	**ARC** **CDC:** NHAMCS; NHDS; NVSS **EPA:** NMMAPS **NOAA (NWS, NCDC, NSSL):** **States or local jurisdictions:** ME/Cs; vital statistics
Morbidity and mortality attributed to natural forces *(optional)*	1) Number of illnesses or injuries from natural disasters by type of disaster *(optional)* 2) Number of deaths from natural disasters by type of disaster *(optional)*	**ARC** **CDC:** NHAMCS; NHDS; NVSS **EPA:** NMMAPS **NOAA (NWS, NCDC, NSSL)** **States or local jurisdictions:** ME/Cs; vital statistics
Intervention		
Emergency preparedness, response, and mitigation training programs, plans, and protocols *(core)*	1) Proportion of jurisdictions for which multi-institutional exercises to prepare for disaster response are conducted annually *(core)* 2) Proportion of jurisdictions for which there protocols exist for public education messages to elicit preventive behaviors among resident population *(optional)* 3) Proportion of jurisdictions for which early warning systems are in place *(optional)* 4) Proportion of jurisdictions for which sheltering programs exist *(optional)* 5) Proportion of jurisdictions for which safe building codes are enforced *(optional)*	**CDC (NCEH)** **FEMA** **NOAA (NWS, NCDC, NSSL)** **States or local jurisdictions:** health and public safety agencies; local FEMA

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Lead

Indicator	*Suggested Measure*	*Potential Data Source*
Hazards		
Lead contamination in the environment *(optional)*	1) Proportion of housing stock built before 1950 *(optional)* 2) Lead levels in sediment and in game or commercial fish *(optional)*	**CB** **HUD** **States or local jurisdictions:** environmental protection agencies, especially those with indicator projects
Residence near metal processing industries *(developmental)*	1) Proportion of population residing near lead smelters *(developmental)*	**CB** **HUD**
Exposure		
Blood lead level (in children) *(core)*	1) Proportion of high-risk children with elevated blood lead level *(core)*	**CDC:** NHANES; Lead Surveillance Program **States or local jurisdictions:** prevalence surveys
Health Effect		
Lead poisoning (in children) *(core)*	1) Number of hospitalizations from lead poisoning in children *(core)*	**CDC:** NHAMCS; NHDS **States or local jurisdictions:** hospital discharge surveys
Intervention		
Lead elimination programs *(optional)*	1) Number of jurisdictions with lead training and certification programs *(optional)* 2) Proportion of population living in pre-1950 housing that has been tested for the presence of lead-based paint *(optional)* 3) Number of completed lead abatements *(developmental)*	**CB** **CDC:** NHIS **EPA** **HUD** **States or local jurisdictions** **Private sector:** industry monitoring systems

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Noise

Indicator	*Suggested Measure*	*Potential Data Source*
Hazard		
Residence in noisy environments *(optional)*	1) Number of noise complaints *(optional)* 2) Level of noise monitored in a community *(optional)*	**States or local jurisdictions:** police, sheriff offices
Exposures		
(None identified)		
Health Effect		
Noise-induced hearing loss (non-occupational) *(core)*	1) Proportion of noise-exposed adults with hearing loss *(core)* 2) Proportion of children and adolescents with hearing loss *(optional)*	**CDC:** BRFSS; NHANES; NHIS; YRBS **DOD (Recruiting Offices)** **States or local jurisdictions:** prevalence surveys from health agencies, schools
Intervention		
Hearing protection practices *(optional)*	1) Proportion of population using appropriate ear protection devices and equipment *(optional)* 2) Number of jurisdictions with noise ordinances and prohibitions on specific activities *(optional)*	**CDC:** NHIS **OSHA**

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Pesticides

Indicator	*Suggested Measure*	*Potential Data Source*
Hazards		
Pesticide use and patterns of use *(core)*	1) Annual tons used *(core)* 2) Pounds applied *(core)* 3) Patterns of use in agriculture, home, and garden *(optional)* 4) Number of worker and community complaints about possible pesticide exposure *(developmental)*	**EPA (OPP, Health Effects Division)** **USDA (PDP):** **USGS (NAWQA, NASQAN)** **States or local jurisdictions:** monitoring and reporting systems; environmental protection agencies, especially those with indicator projects; local USGS Offices
Residual pesticide in foods *(core)*	1) Proportion of foods with residual pesticide levels that fail to meet safe consumption regulations and guidelines *(core)*	**EPA** **USDA (FDA)**: Total Dietary Survey
Exposure		
Biologic markers of pesticides or pesticide metabolites in human tissue *(optional)*	1) 95th percentile blood and urine concentration levels for biomarkers of exposure to carbaryl (1-naphthol), methyl parathion and parathion (paranitrophenol), chlorpyrifos (3,5,6-trichloro-2-pyridinol), propoxur (isopropoxyphenol), 2,4-D, o-phenylphenol, permethrins, diazinon, chlordane, dieldrin, DDT, lindane *(optional)* 2) 95th percentile urine concentration level for six biomarkers of exposure to 28 pesticides: dimethyl phosphate, dimethyl thiophosphate, dimethyl dithiophosphate, diethyl phosphate, diethyl thiophosphate, diethyl dithiophosphate *(optional)*	**CDC:** NHANES; NRHEEC **States or local jurisdictions:** survey data from human exposure capacity-building projects
Health Effect		
Pesticide-related poisoning and illness *(core)*	1) Incidence of pesticide-related poisonings and illnesses in pesticide workers *(core)* 2) Number of non-occupational pesticide-related poisoning and illness *(core)* 3) Number of pesticide-related poisoning and illness in children *(core)*	**AAPCC:** TESS **CDC:** NHDS; SENSOR/NIOSH surveillance systems; NVSS; terrorism surveillance **States or local jurisdictions:** injury indicators surveillance; ME/Cs; pesticide poisoning surveillance programs; terrorism surveillance

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Pesticides

Indicator	*Suggested Measure*	*Potential Data Source*
Interventions		
Compliance with pesticide application standards *(core)*	1) Proportion of workers, handlers, and trainers in compliance with employee training standards *(core)* 2) Proportion of workers in compliance with recommendations for home and yard use *(developmental)*	**CDC:** NHIS **EPA** **OSHA** **USDA** **States or local jurisdictions:** pesticide programs within agriculture, environment, and health agencies
Public and professional education *(optional)*	1) Public awareness campaigns about pesticide hazards and safe application and use *(optional)* 2) Public and professional education about symptoms of low-level pesticide exposure *(optional)*	**EPA** **OSHA** **USDA** **States or local jurisdictions:** pesticide programs in agriculture, environment, and health agencies
Alternatives to pesticide use *(developmental)*	1) Number of jurisdictions in which Aorganic@ foods are available *(developmental)* 2) Consumption patterns of Aorganically grown@ foods *(developmental)*	**EPA** **OSHA** **USDA** **States or local jurisdictions:** pesticide programs in agriculture, health, and environmental agencies, especially those with indicator projects

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Sentinel Events

Indicator	*Suggested Measure*	*Potential Data Source*
Hazard		
Unsafe or unhealthy environmental event or condition *(optional)*	1) Chemical spill *(core)* 2) Ambient ozone concentration that exceeds the safe level *(optional)* 3) Ambient temperature that exceeds safe threshold *(optional)* 4) Disaster (e.g., natural, sociopolitical) *(optional)*	**ATSDR** **DOT** **EPA** **NOAA, NWS** **States or local jurisdictions:** environmental protection agencies, especially those with indicator projects **USGS**
Exposures		
(None identified)		
Health Effects		
Illness or condition with suspected or confirmed environmental exposure *(core)*	1) Asthma-related death *(core)* 2) Case of methemoglobinemia *(core)* 3) Illness attributed to ambient or drinking water contaminants *(core)* 4) CO poisoning (not fire-related) *(core)* 5) Hospitalization from lead poisoning in a child *(core)* 6) Consultation or emergency department visit for possible poisoning in a child, including lead poisoning *(core)* 7) Pesticide-related poisoning or illness *(core)* 8) Temperature-attributed death *(core)* 9) Food-borne illness *(optional)*	**AAPCC:** TESS **CDC:** BRFSS; Food Net; Pulse Net; NHAMCS; NHDS; NHIS; NVSS **CDC, ARC** **EPA:** NMMAPS **HCFA:** Medicare; Medicaid **NOAA (NCDC; NWS; NSSL)** **States or local jurisdictions:** asthma, CDI and injury indicator surveillance; ambulatory care and hospital discharge data; ME/Cs; vital statistics **Private sector:** HMOs, medical insurers
Unusual pattern of illness or condition with suspected or confirmed environmental contribution *(core)*	1) Rates of acute asthma events *(core)* 2) Rates of cardiovascular and respiratory events in persons with underlying disease on days when outdoor air standards are exceeded or when temperatures are at dangerous levels *(core)* 3) Cancer incidence and mortality rates, specifically lung cancer in non-smokers, mesothelioma, soft tissue sarcoma, and melanoma *(optional)* 4) Incidence rates for adverse reproductive outcomes, specifically low and very low birth weight and pre-term and very pre-term births *(optional)* 5) Incidence rates of developmental disabilities, specifically mental retardation and autism spectrum disorder *(optional)* 6) Incidence rates of birth defects, especially cerebral palsy *(optional)* 7) Syndromes with unknown etiologies that require emergency medical care or cause death *(developmental)*	**CDC:** MACDP; MADDSP; NBDPN; NVSS **HCFA:** Medicare; Medicaid **States or local jurisdictions:** asthma surveillance programs; cancer registries; CDI surveillance; hospital discharge surveys; ME/Cs; vital statistics **Private sector:** HMOs, medical insurance companies; health care databases, especially emergency department visits
Intervention		
Use of surveillance and warning system *(optional)*	1) Number of surveillance systems for sentinel events, syndromes, and unusual patterns of disease that include environmental data *(optional)* 2) Number of vector-control programs that use environmental data *(optional)*	**CDC** **States or local jurisdictions:** health, environmental protection, and natural resources agencies

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Sun and Ultraviolet Light

Indicator	*Suggested Measure*	*Potential Data Source*
Hazard		
Ultraviolet (UV) light *(core)*	1) Number of days in which the UV light index exceeds a safe threshold *(core)*	**EPA** **NOAA (NWS)** **States or local jurisdictions:** environmental protection agencies, especially those with indicator projects
Exposures		
(None identified)		
Health Effects		
Melanoma *(core)*	1) Incidence of melanoma *(core)* 2) Melanoma mortality *(core)*	**CDC:** NHDS, NVSS **States or local jurisdictions:** cancer registries; CDI surveillance hospital discharge surveys; vital statistics
Injuries attributed to UV light *(optional)*	1) Number of corneal burns *(optional)* 2) Number of other eye injuries *(optional)* 3) Incidence of cataracts *(optional)*	**CDC:** NHAMCS, NHDS
Intervention		
Public education *(optional)*	1) Proportion of adults who follow protective measures to prevent melanoma and skin cancer *(optional)* 2) Proportion of adolescents who follow protective measures to prevent melanoma and skin cancer *(optional)* 3) Number and type of sun protection messages issued to the public *(optional)* 4) Number of purchases of sun blocking products *(developmental)*	**CDC:** NHIS **NWS** **States or local jurisdictions:** health agencies **Private sector:** marketing agencies

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Toxics and Waste

Indicator	*Suggested Measure*	*Potential Data Source*
Hazards		
Chemical spills *(core)*	1) Number of chemical spills by type and location *(core)*	**ASDR:** HSEES **DOT** **EPA** **States or local jurisdictions:** environment, transportation, and agriculture agencies
Toxic contaminants in foods *(core)*	1) Levels of toxic contaminants in foods *(core)*	**USDA (FDA):** Total Diet Survey
Hazardous waste sites *(optional)*	1) Proportion of leaking underground storage facilities that have not been remediated *(optional)* 2) Proportion of identified Brownfield properties that have not been remediated *(optional)* 3) Tons of toxic substances and materials sold to general public *(optional)* 4) Proportion of population in close proximity to leaking underground storage facilities, Brownfield properties, and sites on the National Priority List and RCRA lists *(optional)* 5) Number of worker and community complaints about possible toxic exposures *(developmental)*	**ATSDR** **CDC, NIOSH** **DOC** **EPA** **OSHA** **States or local jurisdictions:** agriculture and environmental protection agencies, especially those with indicator projects
Exposures		
Biologic markers of human exposure to heavy metals *(optional)*	1) Blood and urine concentration level (95th percentile) for lead, arsenic, cadmium, manganese, mercury *(optional)*	**CDC:** ABLES; NHANES; NRHEEC **States or local jurisdictions:** lead prevalence surveys
Biologic markers of human exposure to persistent chemicals *(optional)*	1) Serum concentration level (95th percentile) for polychlorinated biphenyls (PCB), dioxins, furans *(optional)*	**CDC:** ABLES; NHANES; NRHEEC
Health Effects		
Possible child poisoning *(core)*	1) Consultations for child poisoning *(core)* 2) Emergency department visit for child poisoning *(core)*	**AAPCC:** TESS **CDC:** NHAMCS; NHDS; NVSS **CPSC** **States or local jurisdictions:** injury indicators surveillance; ME/Cs; vital statistics
Morbidity and mortality associated with toxic substances *(optional)*	1) Number of non-occupational poisonings *(optional)* 2) Number of deaths from non-occupational poisoning *(optional)* 3) Number of injuries resulting from chemical spills *(optional)*	**AAPCC:** TESS **CDC:** NHAMCS; NHDS; NVSS; NEISS; NIOSH **CPSC** **States or local jurisdictions:** CDI and injury indicators surveillance; health agencies, occupational health and safety divisions; ME/Cs; vital statistics

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Toxics and Waste

Indicator	*Suggested Measure*	*Potential Data Source*
Interventions		
Use of surveillance and warning systems *(optional)*	1) Number of jurisdictions that have surveillance systems for detecting methemoglobinemia and acute poisoning from lead, arsenic, cadmium, mercury, pesticides, and other chemicals *(optional)* 2) Number of fish consumption advisories *(optional)*	**States or local jurisdictions:** health, environmental protection, and natural resources agencies
Waste and toxic substances reduction *(optional)*	1) Proportion of solid waste diverted from disposal *(optional)* 2) Identified sites with completed exposure pathways *(optional)*	**CDC:** NHIS **EPA** **States or local jurisdictions:** health, environmental protection, and natural resources agencies
Public education *(developmental)*	1) Public awareness campaigns about toxic and hazardous household products *(developmental)* 2) Number of purchases of home safety and child-proofing devices (e.g., electrical outlet covers, cabinet locks, smoke detectors) *(developmental)*	**Private sector:** marketing agencies; solid waste disposal companies

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Water, Ambient

Indicators	*Suggested Measures*	*Potential Data Sources*
Hazards		
Monitored contaminants in ambient water *(core)*	1) Levels of contaminants monitored under CWA and state regulations and guidelines by type of water body (e.g., surface, recreational, marine) *(core)* 2) Proportion of marine and freshwater recreational waters that fail to meet water quality regulations and guidelines *(core)* 3) Proportion of treated recreational waters that fail to meet state and local standards for free chlorine levels by type of recreational water (swimming pools, water parks, play fountains) *(core)* 4) Number of health-related closure days for marine and freshwater recreational areas *(optional)* 5) Land-use patterns *(developmental)*	**EPA:** BEACH Program; CWA compliance data **USDA** **USGS (NAWQA)** **States or local jurisdictions:** public drinking water utilities; environmental protection and natural resources agencies; pool inspection program
Point-source discharges into ambient water *(core)*	1) Volume of point-source discharges by type of contaminant (permitted sanitary waste disposal, sewage overflows, unintentional discharges and spills) *(core)* 2) Levels of mercury, dioxin, PCB, other in recreational (fishing) water bodies *(developmental)*	**EPA:** BEACH program **FDA**
Contaminants in shellfish and sport and commercial fish *(core)*	1) Levels of fecal coliform and mercury in shellfish beds *(core)* 2) Levels of mercury, dioxin, and PCB in sport and commercial fish *(core)*	**FDA** **States or local jurisdictions:** shellfish and food safety programs in health and natural resources agencies
Exposures		
(None identified)		
Health Effects		
Outbreaks attributed to fish and shellfish consumption *(core)*	1) Number of outbreaks by source (fish, shellfish) and etiologic agent (biologic, toxic, other) *(core)*	**CDC** **States or local jurisdictions:** health agencies
Outbreaks attributed to ambient water contaminants *(core)*	1) Number of outbreaks by source (freshwater, marine, treated recreational water) and etiologic agent (biologic, toxic, other) *(core)*	**CDC** **States or local jurisdictions:** health agencies
Interventions		
Activity restrictions *(core)*	1) Number and type of health-based activity restrictions *(core)*	**EPA:** BEACH Program **FDA** **States or local jurisdictions:** shellfish and food safety programs in health, environmental protection, and natural resources agencies, especially those with indicator projects
Compliance with regulations and guidelines *(optional)*	1) Number of fines for noncompliance with CWA regulations or local guidelines *(optional)*	**EPA**
Public education *(optional)*	1) Public awareness campaigns about health hazards associated with on-lot wastewater treatment systems *(optional)*	**States or local jurisdictions:** health and environment agencies

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002

Measures and Data Sources for Environmental Public Health Indicators

Water, Drinking

Indicators	*Suggested Measures*	*Potential Data Sources*
Hazards		
Monitored contaminants in drinking water *(core)*	1) Number and proportion of drinking water systems that fail to meet water quality regulations and guidelines (SDWA MCLs, CCLs, state lists) by type of water supply *(core)* 2) Measurements of SDWA MCLs, CCLs, and contaminants monitored under state regulations and guidelines by type of water supply *(core)* 3) Number of citations for noncompliance with local standards for free chlorine levels *(optional)*	**AWWA** **EPA:** CWA, SDWIS **States or local jurisdictions:** environmental protection agencies, especially those with indicator projects; Consumer Confidence Reports from local water utilities
Source water contamination *(optional)*	1) Number and type of point-source discharges into drinking water aquifers *(optional)* 2) Levels of naturally occurring toxicants *(optional)* 3) Levels and types of contamination of private water supplies *(developmental)*	**EPA** **USGS** **States or local jurisdictions:** environmental protection agencies, especially those with indicator projects
Exposures		
(None identified)		
Health Effects		
Methemoglobinemia *(core)*	1) Case of methemoglobinemia *(core)*	**States or local jurisdictions:** health agencies
Outbreaks attributed to drinking water *(core)*	1) Number by type of water supply (including bottled water) and etiologic agent (biologic, toxic, other) *(core)*	**CDC** **States or local jurisdictions:** health agencies
Interventions		
Implementation of sanitary surveys *(core)*	1) Number and proportion of drinking water systems in which a sanitary survey has been conducted within past 5 years (by type of water supply) *(core)*	**EPA:** SIDWIS **USGS:** sewage tracer program
Compliance with operation and maintenance standards *(core)*	1) Fines for noncompliance with SDA regulations or local guidelines *(core)* 2) Citations for noncompliance with local water quality regulations or guidelines *(core)*	**AWWA** **EPA** **States or local jurisdictions:** health agencies; public water utilities
Boil-water advisories *(core)*	1) Number of boil water advisories by type of water supply *(core)*	**States or local jurisdictions:** health agencies; public water utilities
Source water protection programs *(optional)*	1) Proportion of wellheads covered by protection programs *(optional)* 2) Proportion of surface water supplies covered by watershed protection programs *(optional)*	**AWWA** **EPA** **States or local jurisdictions:** health agencies; public water utilities
Public education *(optional)*	1) Proportion of the population aware of availability and meaning of consumer confidence reports *(optional)*	**States or local jurisdictions:** health agencies; public water utilities

Source: Environmental Public Health Indicators Project, CDC, NCEH, EHHE, October 2002