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DEPARTMENT OF THE NAVY
NAVY ENVIRONMENTAL HEALTH CENTER
2510 WALMER AVENUE
NORFOLK, VIRGINIA 23513-2617

5090
Ser 06B/ 4049
25 AUG '93

From: Commanding Officer, Navy Environmental Health Center

Subj: AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (ATSDR)

Ref: (a) NAVENVIRHLTHCEN ltr 5090 Ser 06B/2889 of 21 May 93

Encl: (1) ATSDR Environmental Data for Public Health Assessment

1. ATSDR released a draft guidance document, "Environmental Data Needed for Public Health Assessments" for public comment. The document describes the general focus of a public health assessment and provides a list of site information and environmental data that ATSDR attempts to obtain. The document is intended for use by remedial project managers, Installation Restoration Program managers, and others involved in the public health assessment process.

2. We reformatted the document into an easy-to-use checklist (enclosure 1) for Department of the Navy personnel. It is divided into sections for general information, exposure pathway information, and other information. We revised the checklist based on ATSDR comments, and enclosure (1) supersedes the version in reference (a). The major revision is for the introductory section which now includes an additional discussion about the role of ATSDR.

3. Use the checklist with the following precautions:

a. The draft guidance document is subject to change after the public comments received by 30 June 1993 are considered.

b. Use the checklist for initial review only. If more detailed evaluation of environmental data is required, review ATSDR's draft guidance document and/or discuss the issue with the ATSDR health assessor for the specific Department of the Navy installation.

4. If you have any questions or need assistance with ATSDR issues, please contact Commander Gary E. Williams, MSC, USN, Deputy Director for Environmental Programs, at (804) 444-7575 or DSN 564-7575, extension 399.

P. D. BARRY

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Subj: AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (ATSDR)

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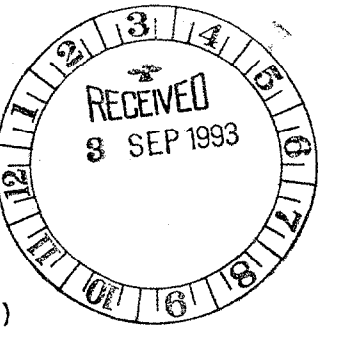

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ATSDR Environmental Data For Public Health Assessment

1. The Agency for Toxic Substances and Disease Registry (ATSDR) has released a draft guidance document, "Environmental Data Needed for Public Health Assessments" for public comment. The document describes the general focus of a public health assessment and provides a list of site information and environmental data that ATSDR attempts to obtain from the Environmental Protection Agency, the potentially responsible party, or other lead agencies responsible for conducting environmental investigations. The document is intended for use by Remedial Project Managers, Installation Restoration Program Managers, ATSDR Regional Representatives, and others involved in the public health assessment process.

2. ATSDR health assessors evaluate how and where people may be exposed to site contaminants. Environmental data are reviewed to determine the contaminant locations and concentrations. Much of the needed information is in remedial investigation (RI) reports and other environmental studies conducted by the Environmental Protection Agency (EPA), federal facilities, and state agencies. Other information, such as contaminant concentrations in off-site areas where people might be exposed (e.g., residential wells, fish), is not usually available at the beginning of the RI process. The following checklist describes specific data that are crucial for determining human exposure to hazardous substances and evaluating related health effects. The availability of this information early in the remediation process would contribute to timely identification of needed public health actions.

3. The Navy Environmental Health Center has reformatted the document into a checklist for ease of use by Department of the Navy personnel. The checklist is divided into sections for general information, exposure pathway information, and other information.

4. The checklist is attached. The checklist should be used with the following precautions:

a. The draft guidance document is subject to change after the public comment period ends on 30 June 1993.

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b. On a site-by-site basis, consider which checklist items would be necessary to determine if people are being exposed to site contaminants. Those items should be added to the site's environmental sampling workplan. ATSDR health assessors are available to discuss which items may be pertinent for specific sites.

ATSDR Environmental Data For Public Health Assessment
General Information

1.0 General Information—Data Quality and Background Information	YES	NO
1.1 Are Data Quality Objectives described?		
1.2 Are Quality Assurance/Quality Control requirements described (at least Level III to Level V)?		
1.3 Are site identifiers listed?		
Site name and alias?		
Site address or location?		
Site type (e.g., mine tailings, landfill, surface impoundment, etc.)?		
EPA technical contact's name and telephone number?		
Remedial Project Manager's name and telephone number?		
Installation contact's name and telephone number?		
Descriptions of problems/concerns?		
1.4 Is site history information provided?		
Dates of operation and significant events?		
Descriptions of previous releases and actions taken to remedy them?		
Why the site was listed on the NPL?		
Descriptions of physical barriers to prevent pollutant transport?		
Current CERCLA/RCRA status of site?		
Current structural conditions of container, vessels, and buildings holding substances?		

1.5 Is site geographic and demographic data provided?		
Plotting of the site on the USGS quadrangle map, including the scale and map name?		
Political geography, i.e., city/town, county, state?		
Distance from site to closest residence?		
Approximate population residing within 1 mile of site or within the potentially affected area?		
Sensitive land uses and features within 1 mile of the site or within the potentially affected area?		
Copies of photographs or databases that depict past or current site conditions?		
1.6 What is the site relationship to the nearby community?		
On-site activities and the estimated number of people involved in each activity?		
Copy of the community relations plan?		
Types of barriers or signs used to prevent public access?		
Estimated frequency of on-site activities?		
Number and types of other potential environmental contamination sources within 1 mile of the site?		
1.7 What substances were identified?		
List of chemical names and Chemical Abstract System (CAS) numbers?		
Estimate of the quantities of contaminants released to each medium (soil, air, surface water, and groundwater)?		
Maximum concentration, range, and extent of contamination in each medium (including biota)?		
Identification of waste materials and quantities?		
Documentation of any chemical, mechanical, meteorologic, or other phenomena that alter the site or chemicals?		
1.8 Is analytical information provided?		
All analytical results for each sample taken, including summary documents?		
Detection limits for all analytical data?		
Descriptions of the level of QA/QC results and data validation reports?		
Analyses of total concentrations?		
Analyses that identify which form a chemical is present if toxicity of the agent's various forms is different?		

COMMENTS: During analysis of human exposure pathways, environmental data are used to determine how human exposure may have occurred, is occurring, or may occur. An exposure pathway consists of five elements: (1) source (landfill, spill, etc.), (2) transport media (groundwater, air, etc.), exposure point (drinking water well, food source, shower, etc.), route of exposure (ingestion, inhalation, etc.), and, receptor population (families, school children, etc.). For the public health assessment, ATSDR evaluates specific data that address pathways, especially at potential exposure points. Much of the information needed by ATSDR is available in reports of remedial investigations (RIs) and other environmental studies conducted by the EPA, federal facilities, and state agencies. Other environmental information critical to exposure pathway analysis, such as

contaminant concentrations at off-site human exposure points, is not as likely to be available at the beginning of the RI process but should be available as soon as possible to help in the timely identification of needed public health actions.

ATSDR health assessors evaluate all available environmental data. ATSDR recommends that when formulating Data Quality Objectives for sampling and analysis of contaminated media at human exposure points (water supply wells, playground soils, etc.), the level of QA/QC should not be less than that used for risk assessment data (Levels III to V).

ATSDR Environmental Data For Public Health Assessment
Exposure Pathway Information

2.0 Soil Exposure Pathway	YES	NO
2.1 Are surface soil results reported separately from subsurface soil results?		
2.2 Were surface soil samples taken from 0 to 3 inches?		
2.3 Are surface soil results available for before and after removal?		
2.4 Are surface soil results available for before and after remediation?		
2.5 Is the purpose of each sampling effort described?		
2.6 Are exact sample locations, including descriptions and map locations provided?		
2.7 Is the depth of sampling points indicated?		
2.8 Are samples vertical composites?		
2.9 Is the type of sample indicated (grab or composite)?		
2.10 Is the sampling scheme for composite samples indicated?		
2.11 Is sample analysis information provided (methods, detection limits, concentrations)?		
2.12 Is the date of the sample indicated?		
2.13 Is the type of soil indicated (sandy, silty, clayey, etc.)?		
2.14 Is a description of vegetative cover provided?		
2.15 Is land use described?		
2.16 Are any special features described?		

COMMENTS: Contaminated soils may expose individuals who live, play, or work near the site to multiple contaminants at levels of health concern. Ingestion of contaminated surface soil, particularly by children, is a primary concern. Inhalation of contaminated dusts and direct dermal contact with contaminated soils also can lead to adverse health effects. Generally, the public is exposed to only the top few inches of soil; therefore, ATSDR has defined surface soil as the top 3 inches. For the public health assessment, ATSDR needs the concentrations of contaminants found in surface soil reported separately from those found in subsurface soil. Since ATSDR considers past, current, and future exposure scenarios, ATSDR needs to know the concentrations of contaminants in the soil before and after removal or remedial actions.

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ATSDR Environmental Data For Public Health Assessment
Exposure Pathway Information

3.0 Surface Water Exposure Pathway	YES	NO
3.1 Are samples taken in areas of potential human exposure?		
3.2 Does the site map indicate the 100 year flood plain?		
3.3 Are locations of all downstream surface water intakes for a distance of potential impact identified?		
3.4 Is identification/descriptions of NPDES effluents from the site and sources upstream and downstream of the site at distances potentially affecting the surrounding community provided?		
3.5 Is the use classification of the surface water bodies provided?		
3.6 Are past, current, and future uses of surface water on site and downstream identified?		
3.7 Are hydrologic characteristics listed?		
3.8 Is the relationship of surface water to groundwater discussed?		
3.9 Are copies of surface water sampling records and logs provided?		
3.10 Are the pH and specific contaminant concentrations listed?		
3.11 Are the sampling and analytical methods used, detection limits, QA/QC data, and concentrations detected given?		

COMMENTS: Representative sampling of surface water upgradient and downgradient of the site is necessary to distinguish health implications associated with the site. All surface water bodies on or impacted by the site should be sampled, including ditches, gullies, and perennial and intermittent streams that could transport contaminants away from the site. Samples should be taken in areas with potential for human exposure.

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ATSDR Environmental Data For Public Health Assessment
Exposure Pathway Information

4.0 Sediment Exposure Pathway	YES	NO
4.1 Is ATSDR's definition of sediment followed? "Any solid material, other than waste material or waste sludge, that lies below a water surface; that has been naturally deposited in a waterway, water body, channel, ditch, wetland, or swale; or that lies on a bank, beach, or floodway land where solids are deposited"		
4.2 Are sample descriptions and locations indicated on a site map?		
4.3 Are the depths of sampling points indicated?		
4.4 Is the type of sample (grab or composite) indicated?		
4.5 Is the sampling scheme for composite samples described?		
4.6 Are the constituents analyzed for, analytical methods used, detection limits, QA/QC data, and concentrations detected indicated?		
4.7 Are sampling dates indicated?		
4.8 Are site conditions at the time of sampling indicated?		

COMMENTS: Residents may be exposed to contaminated sediment either through direct contact, ingestion, and inhalation, or through a secondary pathway--ingestion of contaminated biota. Sediment sampling is needed at possible human exposure points such as recreational areas or children's play areas and where contaminated sediment may enter the food chain such as known fishing and hunting areas, if there is the possibility of uptake of contaminated sediments by wildlife, fish, or shellfish that later may be eaten by people.

Sediments may also be mechanically disturbed and transported to possible human exposure points by dredging. Therefore, sampling and analysis of the dredged sediments, as well as the stream channels and impoundments, may be needed at some sites.

Contaminated sediments are not always found in constantly wet drainage areas. Many drainage ditches, surface impoundments, and ephemeral streams associated with releases of hazardous waste are dry part of the year. To prevent confusion between "soil" and "sediment", ATSDR uses a specific definition for sediment. See 4.1 above.

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ATSDR Environmental Data For Public Health Assessment
Exposure Pathway Information

5.0 Groundwater Exposure Pathway	YES	NO
5.1 Has the correlation between groundwater contaminants measured in site monitoring wells and contaminants measured in water supply wells been evaluated?		
5.2 Are the site monitoring wells screened in the same groundwater zone as the water supply wells?		
5.3 Is quarterly monitoring conducted, especially for wells at the leading fringe of the contamination plume?		
5.4 Are groundwater samples UNFILTERED? (EPA standards are for unfiltered water)		
5.5 Is a well survey and inventory completed within at least 1 mile of the site or the potentially contaminated area?		
Inventory of downgradient areas for known contamination plumes?		
Well inventory includes number, depth (screen interval), and well location?		
5.6 Are water sources categorized?		
Monitoring wells?		
Facility water supply wells?		
Municipal/utility wells or springs?		
Residential wells or springs or small, unregulated water systems?		
Commercial//industrial production wells?		
Irrigation wells (including lawn-watering systems)?		
Community wells (including those for mobile home parks)?		
Piezometers?		
Livestock water wells/springs?		
5.7 Is a description of site-specific and regional hydogeology provided?		
Depth, thickness, extent, name, and characteristics of groundwater zones/aquifers?		
Depth, thickness, extent, name, and characteristics of drinking water aquifers?		
Vertical and lateral extent of groundwater contamination?		
Natural geochemistry of contaminated groundwater zones/drinking water aquifers?		

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5.8	*Is a description of past and current groundwater monitoring provided?*		
	Dates and frequency of past and current monitoring?		
	List of analytes?		
	Sampling procedures?		
	Water level measurement procedures?		
	Dates of and procedures used for aquifer tests?		
5.9	Are analytical results of groundwater monitoring provided?		
	Field measurements for temperature, conductivity, and pH?		
	Tables of analytical results listed by sample location?		
	Summaries of analytical results in which the maximum concentrations of contaminants are listed?		
	QA/QC analyses for different sampling episodes?		
	Analytical results of metal contaminants derived from unfiltered groundwater samples?		
	Water level measurements, calculated gradients, potentiometric contour maps, and figures?		
	Monitoring well construction logs, boring logs, and site-specific cross-sectional maps?		
	Descriptions of past, current, or planned groundwater remedial actions, including alternate water supplies?		
	Descriptions and results of geophysical, geochemical, or soil/gas surveys used for plume evaluation?		
	Descriptions and locations of known/suspected sources of groundwater contamination?		
	Descriptions and locations of groundwater/surface water recharge/discharge areas? (include sinkholes, sinking or disappearing streams, streambank or drainage ditch seeps, leachate seeps, etc.)		

COMMENTS: Human exposure to contaminated groundwater from water supply wells is a common public health problem associated with hazardous waste sites. To prevent or mitigate such exposure, the location and use of potentially contaminated wells or springs should be identified as soon as possible after discovery of the hazardous waste problem. Characterization of the vertical and lateral extent of the groundwater contamination plume is also needed to evaluate the groundwater pathway, but only as it relates to past, present, and future contaminant movement to human exposure points.

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ATSDR Environmental Data For Public Health Assessment
Exposure Pathway Information

6.0 Air Exposure Pathway	YES	NO
6.1 Are ambient air data provided?		
Locations where samples were taken including descriptions and illustrations on maps?		
Meteorologic conditions, temperature, wind speed, and wind direction when samples were taken?		
Which samples were upwind? downwind?		
Descriptions of activities in the area during sampling that may have contributed to concentrations detected?		
Documentation that samples were taken in the breathing zone (4-5 feet above ground)?		
Descriptions of sampling methods used and constituents collected by each method?		
Sampling frequency and dates (duration of continuous or integrated composite sampling, grab samples, etc.)?		
Constituents analyzed for, analytical methods used, detection limits, QA/QC, and concentrations detected?		
Ambient air sampling where people may be exposed on-site or off-site?		
Ambient air data from the maximum predicted off-site exposure locations?		
6.2 Are stack emissions data provided?		
Descriptions of technology associated with each stack? (drawings, raw feed materials, operating temperatures, products/byproducts, etc.)		
Permits (state, federal, Clean Air Act, PCB, and RCRA or CERCLA documentation)?		
Compliance reports?		
Information on planned or unplanned air releases?		
Stack testing or trial burn results?		
Location of closest meteorologic station?		
General meteorologic conditions (wind rose, prevalence of air stagnation events, etc.)?		
Air modeling results for the stack(s) and/or fugitive emissions including parameters used?		
6.3 Are soil gas data provided?		
Analytical results for soil gas surveys with description of sample locations and survey methods?		
Measurements of flammable and explosive gases (instrument readings and calibration procedures)?		
Gas pressure measurements to estimate soil gas contaminants migration?		
Investigation of buried utility lines to determine if the lines provide soil gas pathway?		

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6.4 Are indoor air quality data provided?		
Type of instruments and sample collection methods used with air volume samples?		
Analytical data and analytical methods used including detection limits, equipment calibration, results, etc.?		
Date, time, and temperature when samples were taken?		
Diagram of building showing sampling locations?		
Descriptions of building construction materials and significant construction features?		
Descriptions of sampling locations including type of room, height in room, and distances from room structures?		
Descriptions of building air flow before and during the sampling?		
Descriptions of other contaminants that may be present in the air during normal use?		
Sampling for unoccupied buildings with indoor air constantly "stirred up"?		

COMMENTS: Adverse health effects (acute and chronic) associated with inhalation of air contaminants is a common concern of citizens living and working near hazardous waste sites. Air emissions from past or current production processes, as well as volatilization of organic compounds, *airborne particulates, and acid gases from hazardous waste areas, may expose residents who live or work near the site to contaminants at levels of* health concern.

Hazardous waste areas from which air releases may be significant are surface impoundments, where there may be leaking drums or tanks containing volatile organic compounds; landfills that produce methane gas, which can migrate; waste piles of materials that may be easily entrained by winds or that contain volatile organic contaminants; and contaminated soils that may become entrained in the air by winds or vehicular traffic. Air emissions may also be generated by certain remedial technologies such as excavation, landfarming or bioremediation, air stripping, pond aeration, incinerator stack emissions and ash, or during handling of contaminated soil.

Air releases from past and/or current production processes may cause off-site deposition of contaminants that may lead to soil, biota, and surface water contamination, which in turn may result in the population near the site having secondary exposure. Therefore, site characterization should include an evaluation of production area air releases, meteorologic data, and possibly, modeling of those releases to determine potential off-site air exposure points and deposition areas that may need to be sampled.

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ATSDR Environmental Data For Public Health Assessment
Exposure Pathway Information

7.0 Food Chain Pathway	YES	NO
7.1 Is the biota sample size large enough to be statistically valid (>20 samples per location per sampling episode)?		
7.2 Are organisms sampled from the same species, age, and reproductive status?		
7.3 Is the type of sample indicated (grab or composite)?		
7.4 Are special handling procedures for biologic samples indicated?		
7.5 Are animal and plant species that may be eaten by people identified (past/present)?		
7.6 Are the populations consuming each potentially contaminated crop identified (e.g., residential garden)?		
7.7 Are the populations consuming each potentially contaminated animal identified (e.g., local subsistence hunting/fishing, commercial animals/fishing)?		
7.8 Is past, present, and intended future land use described?		
7.9 Is sampling/analysis completed for on-site edible plants?		
7.10 Is sampling/analysis completed for on-site animals?		
7.11 Is sampling/analysis completed for off-site edible animals likely to pass through contaminated areas?		
7.12 Is sampling/analysis completed for off-site edible plants potentially exposed to contaminated media?		
7.13 Is sampling/analysis completed for off-site edible animals potentially exposed to contaminated media?		
7.14 Does the protocol for biota studies include how each species was harvested?		
7.15 Does the protocol for biota studies include how representative samples were selected?		
7.16 Does the protocol for biota studies include what portions were sampled and analyzed?		
7.17 Does the protocol for biota studies include special specimen-handling procedures?		
7.18 Does the protocol for biota studies include contaminants analyzed for, methods used, and detection limits?		
7.19 Does the report for biota studies include:		
Analytical results with QA/QC data?		
List of samples and their label identification?		
Sample size of at least 20 individuals per species per episode?		
Analysis of edible portions only?		
Analysis of grab rather than composite samples?		
Control populations of at least 20 individuals? CLW		

COMMENTS: Human populations may be exposed to site contaminants by eating plants or animals that have incorporated the contaminants into

their bodies. Both on-site and off-site hunting, fishing, foraging, and farming activities may bring people into contact with those contaminants. Some substances, particularly fat-soluble substances and heavy metals, may reach concentration in animal tissues that are thousands of times higher than those found in water, soil, and sediment. For discussion in the public health assessment, it is important that the edible portions of such food items be analyzed for contaminants of concern. It is impossible to draw meaningful human food-safety conclusions when the whole body of a fish is analyzed, rather that fillet samples, or when a whole plant is analyzed and only the fruits are normally ingested, etc.

When planning and designing an investigation of food-chain contamination, it is important to have a well-designed biota sampling protocol, with sample size large enough to be statistically significant (more that 20 samples per location per sampling episode are recommended when parametric statistical methods will be used). In particular, organisms of different species, ages, or reproductive status should not be sampled without strong justification. For example, when assessing the impact of contaminated sediment upon the edible fish populations in a stream, results of analyses of tissues from bottom-feeding fish should not be combined with those from water-column feeders; because of their different feed habits, very different effects may be expected. Discrete ("grab") samples are preferred because ATSDR tries to determine the maximum contamination to model worst-case scenarios.

Special handling of biologic samples needs to be considered. Some analytical procedures require that live or fresh-frozen fish be transported to the laboratory immediately for analysis; the accuracy of other procedures may not be affected if formalin-preserved specimens or those held frozen for weeks or months are used. Such considerations, along with any special problems encountered, should be included in an appendix to the document for quality assurance review.

ATSDR Environmental Data For Public Health Assessment
Other Information

8.0 Other Information–Identification of Physical Hazards	YES	NO
8.1 Are descriptions/locations of physical barriers to prevent access to on-site physical hazards provided?		
8.2 Are descriptions/locations of on-site/perimeter warning signs provided?		
8.3 Are confined spaces, especially underground areas identified?		
8.4 Is industrial equipment on-site identified?		
8.5 Are explosive or hazardous vapors, especially soil gases identified?		
8.6 Are explosive, shock-sensitive, air or water-reactive, or incompatible materials stored on-site?		
8.7 Does the site have electrocution hazards such as exposed wires or unsecured fuse boxes?		
8.8 Does the site have structurally unsafe or deteriorating structures?		
8.9 Does the site have open pits or vats containing chemicals or water?		
8.10 Does the site have evidence of sink holes or soil erosion?		
8.11 Are materials stored on-site in danger of collapse because of deteriorating packaging?		
8.12 Is leachate visible or distressed vegetation present?		

COMMENTS: Public health assessments include evaluations of site hazards that may endanger human populations that live or work on or near the site. Physical hazards at hazardous waste sites are often overlooked during initial site documentation and remediation activities. The absence of an adequate barrier between the site hazards and the community often is the single most important factor in determining whether members of the community are likely to access the site and risk physical injury. A gate or fence that can easily be climbed through or over is not considered an adequate barrier to curious children. On-site workers are issued appropriate personal protective equipment and made aware of the hazards on site; community members are not.

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ATSDR Environmental Data For Public Health Assessment
Other Information

9.0 Other Information--Radiologic Parameters and Samples	YES	NO
9.1 Are the types of measurement instruments and the manufacturer/model for each detector/probe indicated?		
9.2 Is calibration information such as the radioisotope used, date of last calibration, and instrument efficiency for each radioisotope indicated?		
9.3 Are detection limits for each radioisotope provided including sample counting time, statistical error, total counts, and/or counts per minute?		
9.4 Are average background values and how often background was determined provided for laboratory instruments?		
9.5 Are the channels and whether a standard was counted either before or after indicated for multi-channel analyzers?		
9.6 Is information provided for field measurements? Probe location (e.g., distance from the surface or surface contact)? Background readings? Where background readings were taken? Instrument(s) used? Measurement results whether gross or net readings? Proper units (cpm converted to dose rate or exposure rate)?		
9.7 Is information provided for smear results? Area covered by smear? Type of laboratory instrument used?		
9.8 Is information provided for air sample reports? Description of sampler? Height above ground for the sampling system? Volumetric flow through the filter? Sample time? Sample area? Pore size and type of filter used (charcoal, AgI, etc.)		

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9.9 Is information provided for soil sample reports?		
Grid size for sample?		
Sample depths?		
Number of samples?		
Type of samples (grab or composite)?		
Number of samples in composite?		
9.10 Is information provided for water sample reports?		
Sample filtered before counting?		
Sample preparation procedures?		
Type of EPA method used?		
9.11 Is information provided for radon level determinations?		
Type of detector used?		
Time of year for sample?		
Indoor building status (vacant, sealed, or inhabited)?		
Indoor/outdoor temperatures during sample collection period?		
Length of time detector was in building?		
Laboratory approval by EPA radon program?		

COMMENTS: Interpretation of radiologic samples can be quite difficult if certain important information is not included in the data package. In some cases, improper calibrations might be used, resulting in erroneous readings. In many cases, it is unclear if the readings are gross (including background) or net. Efficiencies of the actual monitoring probes can vary; probes can be specific for certain types of radiation. Those and other factors should be clarified for ATSDR to evaluate the radiological information.

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