

Endnotes

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* According to the USEPA, the “old landfill” is not the only landfill located on the Camp Atterbury site; a “new landfill” is reportedly being managed under the Resource Conservation and Recovery Act (RCRA). This will be addressed in the “Camp Atterbury Site Snapshot” Part 2, upon receipt of additional documents through FOIA requests to the state and federal agencies.

Glossary of Terms

Applicable or Relevant and Appropriate Requirements (ARARs) – enforceable standards, criteria, or limitations that an agency (e.g. EPA) ‘borrows’ from another federal or state statute or regulation. EPA uses ARARs to help select cleanup levels and design response actions at contaminated sites. “Applicable” means that the standards specifically address a certain contaminant(s) that is found at the specific site being reviewed by EPA. “Relevant and Appropriate” means that while a standard from another source do not specifically address a contaminant at the site in question, it addresses an issue or condition similar to that being encountered on the site in question. ARARs must fit into one of the two categories to have a basis for use when assessing/remediating a site.

Baseline Ecological Risk Assessment (BERA) – a comprehensive evaluation of the likelihood, nature, and extent of risks and adverse effects to ecological receptors (plants and animals) that may occur from exposure to site-specific contaminants.

Bioaccumulation – the process by which the concentration of a chemical in an organism is greater than the concentration of the chemical in an ambient environment/medium (e.g. water). See “Bioaccumulation and Biomagnification” section for more information.

Biomagnification – the process by which a pollutant increases in concentration as it moves along a food chain. Higher-level organisms tend to have greater concentrations of a contaminant than lower-level organisms due to a combination of consuming contaminated prey and bioaccumulating contaminants themselves via other exposure pathways. See “Bioaccumulation and Biomagnification” section for more information.

Community Advisory Group (CAG) – A group of stakeholders affected by a Superfund site or other hazardous waste site. A CAG is a forum by which representatives of diverse community interests present and discuss needs and concerns related to the site and the site cleanup process. CAGs function independently of local, state, and federal agencies.

Composite sample – a mixture of individual samples from multiple locations that are blended together and analyzed as one sample. This is usually done to reduce cost, but can inaccurately represent real conditions on a site as the highest concentrations of contaminant(s) in individual samples/locations can be diluted when blended with lower-concentration samples.

Centers for Disease Control and Prevention (CDC) – federal health agency established in 1946 dedicated to detecting and responding to new and emerging health threats; putting science and advanced technology into action to prevent diseases; promoting healthy and safe behaviors, communities, and environment; and developing leaders and training the public health workforce.

CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act (also known as Superfund). Passed by Congress in 1980 and amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA), CERCLA gave EPA the authority to pursue the remediation of uncontrolled hazardous waste sites. A fee collected from the petroleum and

chemical industry facilitated the cleanup of abandoned or “orphaned” sites where a viable responsible party could not be identified (Superfund trust fund.)

DERP – Defense Environmental Restoration Program. Conducted in consultation with the Administrator of the EPA. In 1986, the Superfund Amendments and Reauthorization Act (SARA) mandated that the Department of Defense (DOD) follow the same cleanup regulations that apply to private entities, establishing DERP. The DOD through DERP is responsible for identifying and cleaning-up military contamination to protect human health and the environment.

Downgradient/downstream samples – taken from areas “further down” from a source of contamination (in the direction that the groundwater or surface water flows, respectively) to show the extent of contamination, i.e. the distance that contaminants have migrated and at what concentration.

Endangered Species Act – Federal law enacted in 1973 to conserve species and their habitats. Species facing possible extinction are listed as “threatened,” “endangered,” or as “candidate” species for either listing. Requires government agencies to put recovery and conservation plans in place to protect the species and its habitat.

Exposure pathway – how a contaminant moves through the environment from its source to a point of contact with people and animals. Exposure pathways can include ingestion, inhalation, and dermal contact.

FUDS – Formerly Used Defense Sites. See EJ Toolkit Vol. 2 for more information.

IDEM – Indiana Department of Environmental Management. The Indiana state environmental agency established in 1986: IDEM’s mission is “to implement federal and state regulations to protect human health and the environment while allowing environmentally sound operations of industrial, agricultural, commercial and government activities vital to a prosperous economy.”

National Priorities List (NPL) – EPA’s list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term cleanup under Superfund (CERCLA). The list is based primarily on the score a site receives from the Hazard Ranking System (HRS).

Natural Resources Inventory (NRI) – an assessment and index of important natural resources such as wetlands, surface and groundwaters, forests, and other sensitive habitats. Cultural resources can also be seen in an NRI as well, such as historic sites, recreational areas, and other critical sites of cultural significance, such as Native American burial grounds. An NRI is an essential part of land-use planning, remediation of contaminated sites, and conservation of resources.

No Further Remedial Action Planned (NFRAP) – a decision made as part of the Superfund remedial site evaluation process to denote that further remedial assessment activities are not required and that the facility/site does not pose a threat to public health or the environment sufficient to qualify for placement on the NPL based on currently available information. These

facilities/sites may be re-evaluated if EPA receives new information or learns that site conditions have changed. This designation does not mean that there is no contamination present on the site.

Persistent Bioaccumulative Toxic (PBT) chemicals – harmful chemicals that do not readily break down in the environment and amass in the tissues, fats, and organs of living organisms.

Potentially Responsible Party (PRP) – an individual, company, government agency, or other entity (such as owners, operators, transporters or generators of hazardous waste) potentially responsible for, or contributing to, contamination at a site.

Preliminary Assessment (PA) – an initial and limited evaluation of a site to determine if the site requires further investigation or action. One of the first steps undertaken by federal and state agencies upon notification of a hazardous waste site or release.

RCRA – Resource Conservation and Recovery Act. Passed in 1976 by Congress and continually developed through new amendments, RCRA gives USEPA authority to develop a program to manage uncontrolled hazardous (“Subtitle C” waste) and non-hazardous solid waste (“Subtitle D” waste).

Scintillation counter – a device used for detecting and measuring ionizing radiation.

Sentinel species – organisms used to detect risks to humans by providing advance warning of an environmental hazard. Sometimes interchangeably used with “indicator species.”

Site Investigation (SI) – a Site Investigation (or Site Inspection) usually follows the Preliminary Assessment (PA) and builds on the information gathered in the PA. SI sampling is limited and oriented towards worst-case conditions. Sampling concentrates on determining the presence of highly toxic contaminants, contamination significantly above background levels, contamination at points of potential human exposure, and contamination in sensitive environments. Used as the basis for scoring HRS criteria for inclusion on the Superfund NPL.

SVOC – Semivolatile organic compound: a chemical that contains carbon and has the moderate tendency to volatilize (turn into a gas/vapor) at room temperature. Examples of SVOCs are phenol, naphthalene, benzo(a)pyrene, and di-(2-ethylhexyl) phthalate.

Total Petroleum Hydrocarbons (TPH) – an ‘umbrella’ term used to describe hundreds of compounds that come from crude oil. Often TPH samples do not only include petroleum products, but other chemicals such as jet fuel, benzene, toluene, xylene, and naphthalene. TPH is usually sampled to develop a baseline; there are so many different crude oil chemicals that it can be costly and inefficient to measure each one separately – however, it is useful to also know the individual constituents on a site to most effectively develop a remediation plan.

Upgradient/upstream samples – taken from areas “further up” from a source of contamination (opposite the direction that the groundwater or surface water flows, respectively) to identify “background concentrations” of chemicals in the environment. The goal of these samples is to pinpoint locations *before* the source of contamination that are believed to not have been impacted

by the source, to most accurately delineate the extent and direction of contaminant migration in the environment.

USACE – United States Army Corps of Engineers. The mission of USACE is to deliver vital public and military engineering services; partnering in peace and war to strengthen our Nation’s security, energize the economy and reduce risks from disasters. USACE manages the Formerly Used Defense Sites Program for the Dept. of Defense. See “FUDS.”

USEPA/EPA – United States Environmental Protection Agency. The mission of USEPA is to protect human health and the environment through scientific research and development, development and enforcement of regulations, public education programs, and giving grants to state and local environmental organizations.

VOC – Volatile organic compound: a chemical that contains carbon and easily volatilizes (turns into a gas/vapor) at room temperature. Examples of VOCs are TCE, PCE, TCA, and benzene.

QA/QC – Quality Assurance/Quality Control. The process by which a laboratory checks to see if precise and accurate data has been generated. QA/QC reports give much greater confidence to a set of data and can be the difference between sampling data being considered “usable” or “unusable” to base environmental decision-making on.

World Health Organization (WHO) – “the Global Guardian of Public Health;” an agency of the United Nations that works to examine critical health issues, define the best solutions, and deliver and implement the strongest recommendations to build a healthier future for people all over the world. The WHO publishes and disseminates scientifically rigorous public health information of international significance to be used by policy makers, researchers, health practitioners, and the public at large.

Adapted from USEPA, WHO, CDC, USACE, and IDEM regulatory and guidance documents.

Indiana Assessment Criteria for Select Contaminants Discussed in Fact Sheets 1 + 2

What are regional screening levels (RSLs)?

RSLs are human health risk-based concentrations that are calculated using formulas developed by EPA on the federal level, by state environmental agencies, or by other federal agencies like the ATSDR. They provide a standardized basis for evaluating contaminated sites, however they do not account for site-specific characteristics/exposure pathways – this is usually the task of a **risk assessor**. These RSLs also do not address ecological risk/food web models.

Table 1: IDEM STATE SCREENING LEVELS (UPDATED 2018)

Chemical Name	Soil Exposure			Ground Water		Vapor Exposure	
	Direct Contact			Soil MTG	Tap	Indr. Air	Ground Water
	Residential (ppm)	Industrial (ppm)	Excavation (ppm)	Residential (ppm)	Residential (ppb)	Residential (ppb)	Residential (ppb)
Lead (Pb)	400 (O)	800 (O)	1000 (O)	270	15	0.15 (N)	---
Arsenic	9.5 (C)	30 (C)	920 (N)	5.9 (M)	10 (M)	0.0065 (C)	---
Zinc	32000(N)	100000	100000	7500 (N)	6000 (N)	---	---
White Phosphorus	2.2 (N)	23 (N)	39 (N)	0.02 (N)	0.4 (N)	---	---
Total Petroleum Hydrocarbons (TPH)	SEE BELOW: IDEM Leaking Underground Storage Tank (LUST) Guidance*						
Diesel Range Organics (DRO)**	3100	5800	---	230	0.26	---	---
Di-(2-ethylhexyl) phthalate	550 (C)	1600 (C)	34000 (N)	29 (M)	6 (M)	12 (C)	---
Pentachlorophenol	14 (C)	40 (C)	2600 (C)	0.028 (M)	1 (M)	5.5 (C)	---
Trichloroethylene (TCE)	5.7 (N)	19 (N)	95 (N)	0.036 (M)	5 (M)	2.1 (N)	9.1 (N)
1,1,1-Trichloroethane	640 (S)	640 (S)	640 (S)	1.4 (M)	200 (M)	5200 (N)	13000 (N)
Tetrachloroethylene	110 (N)	170 (S)	170 (S)	0.045 (M)	5 (M)	42 (N)	110 (N)
Cyanide	32 (N)	150 (N)	560 (N)	40 (M)	200 (M)	0.83 (N)	---
1,1-Dichloroethylene	320 (N)	1000 (N)	1200 (S)	0.05 (M)	7 (M)	210 (N)	300 (N)

* IDEM Leaking Underground Storage Tank (LUST) Guidance: maximum allowable concentration in soil = 10,000 ppm

** Taken from IDEM 2009 “Announcement of Updates to TPH Remediation Goals and Procedures” RISC TPH closure levels default parameters.

(M): Set to maximum contaminant limit
(C): Carcinogenic endpoint

(S): Capped at soil saturation limit (O): Goal is 0 ppm
(N): Noncarcinogenic endpoint