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Is It a REC? – Historic Application of Pesticides (HAP)

Welcome to our continuing series that examines certain site conditions discovered when conducting a Phase I Environmental Site Assessment (ESA) and whether they should be considered ***recognized environmental conditions (REC).*** While the U.S. EPA's amended All Appropriate Inquiries (AAI) Final Rule and the American Society for Testing and Materials (ASTM International) E1527-13 "Standard Practice for Environmental Site Assessments" provide a broad definition for RECS, one potentially ambiguous area remains the historic application of pesticides to former agricultural properties such as farms and orchards that have since become inactive or redeveloped.

Should Historic Application of Pesticides (HAP) be Considered a REC?

The ASTM Standard does not specifically define HAP, nor does the EPA provide a list of specific pesticide practices that must be considered in a Phase I ESA. In its recent guidance document "Historically Applied Pesticide Site Technical Guidance" (December 2015), the New Jersey Department of Environmental Protection offers the following definition of Historically Applied Pesticides: "*pesticides that were found to have long-lived residues and lasting health and environmental impacts. The pesticides of concern, which have not been widely used in many years, are arsenic, lead, DDT (and its metabolites, DDE and DDD), dieldrin, aldrin and chlordane."* This guidance was largely intended to aid in site assessment and remediation. However, the information provided does support the ESA process by offering some consistent examples of impacts to properties where pesticides have been applied, as opposed to those properties or portions of a site where pesticide discharge, dumping or spills have occurred and which should be addressed by other established remedial investigation guidance or regulations. The NJDEP Guidance also goes so far as to recommend specific language in reports or notices where HAP is possible but was not specifically investigated (see text box below).

A is for Arsenic…

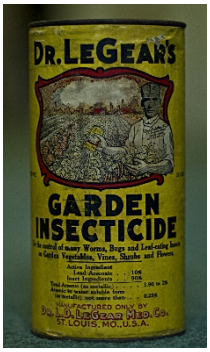
Pesticide application was a common practice in agricultural operations since the late 19th century. Types of pesticide included lead arsenate, which was enthusiastically promoted for use, as evidenced by a weekly radio program sponsored by U.S. Food and Drug Administration that suggested the school rhyme "A is for Apple" be changed to:

A is for Arsenate
Lead if you please
Protector of Apples
Against Archenemies.

Use of arsenic based products increased, and resistant generations of pests resulted in even higher application rates. Ultimately, DDT and other powerful organophosphate and organochlorine pesticides replaced the arsenic products. Of particular concern with all HAPs is that they can remain persistent in the environment long after agricultural practices have ceased and result in present day levels that exceed regulatory soil or water quality standard . A further complicating factor when dealing with arsenates is that soils can contain naturally high levels of arsenic and lead, making it difficult to establish a "background" level or pinpoint locations of actual contamination.

Example Conclusion for HAP Sites (from "Historically Applied Pesticide Site Technical Guidance", New Jersey Department of Environmental Protection, December 2015)

"Please be advised that the remediation that is covered by this Response Action Outcome does not address the remediation of contaminants that may exist from the historical application of pesticides. As a result, any risks to human health presented by the historical application of pesticides may remain. An evaluation of historical pesticides should be completed if there is a land use change to residences, schools, child care centers and playgrounds. This exclusion does not apply if the pesticide contamination is from a discharge due to manufacturing, mixing, or other handling of these chemicals and not from application."



How to Identify HAP

For any Phase I ESA involving a property with past agricultural use it is important to research information on historic land use. It is certainly not unusual to encounter a property almost anywhere that had agricultural use at some point in its history, however some tools make is easier to pinpoint or rule out certain areas, such as:

- Aerial photographs and historic topographic maps that identify cultivated fields, orchards, vineyards, greenhouses and offer clues to locate related potential "hot spots" where pesticides may have been mixed and loaded;
- Deed and title records identifying past ownership and land use;
- Interviews of property owners and workers.

Note: Historic fire insurance maps are not always useful as they were not commonly produced for rural and agricultural properties.

Another consideration for ESAs at former agricultural sites is the intended use or reuse of the property, particularly if a former HAP site will be developed for residences or other unrestricted uses. Especially where lead and arsenic is a concern, first research the background soil concentrations that are common in the property's state or region to help identify what arsenic and lead levels can be considered naturally occurring or indicative of actual pesticide accumulation. Then by sampling and analysis, determine if impacts are limited only to shallow topsoil where pesticides may have been applied, or extend to deeper soils and groundwater areas that may indicate more widespread impacts.