ARCHIVE: **Archived due to the 2014 rule revision. See VA30006.14.001**

TITLE: **Issues Regarding Pesticides in the Investigation of Voluntary Action Program (VAP) Properties which were previously in Agricultural Land-Use**

DATE EFFECTIVE: January 2001

HISTORY: Update of VA30006.00.001- Revision was necessary to reflect changes in the rule citations that became effective in March 2009.

KEYWORDS: Pesticides; hazardous substances; agriculture; Phase I and II property assessments

RULES: OAC 3745-300-01, 3745-300-06, 3745-300-07

QUESTION: Some VAP sites that have a history of agricultural land use may be contaminated with pesticides. First, what are pesticides, and what are some of the issues regarding pesticides that relate to Phase I and II property assessments?

ANSWER: Pesticides are substances or mixtures of substances which prevent, destroy, repel, mitigate, or otherwise control populations of pests. Pests can occur in both terrestrial and aquatic habitats and include: vertebrates, invertebrates, microbes, viruses, or plant species such that they are not on or in living humans or animals. Pesticides are based on either a single active ingredient or a mixture of several active ingredients, which is typically combined with other chemicals to produce what is typically known as a formulation. Different manufacturers will produce formulations that share the same active ingredient, but each formulation may differ on the basis of their active ingredient concentration, type and amount of inert or adjuvant ingredients, manner of application, registration for use on certain crops, or other significant features. The inert chemicals are solvents, carriers, and surfactant compounds; these chemicals have no activity against a target organism. An adjuvant is either a subsidiary ingredient in a formulation, or is sometimes added to a pesticide mixture to optimize the properties of the active ingredient or enhance its efficacy of application properties. Depending on the nature and use regime of a given pesticide, its formulation may also be considered a hazardous substance under VAP rules. The reader is referred to a concurrent TGC which analyzes this important issue separately.

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Modern pesticides have increased specificity and feature low residuals with high acute toxicity to the target pest. A selective pesticide can be applied without harm to a growing cash crop; for this reason, most herbicides are selective. These attributes have the potential to lessen the amount of pesticides in the environment. However, the pesticides that were in popular use from the 1940's to the 70's were more toxic, more persistent in the environment, and less regulated in terms of registration and application. For example, popular insecticides of the 1950's and 60's were chlorinated insecticides such as DDT or Chlordane, which have residues that can persist in the environment for decades. Pesticides can themselves be contaminated with hazardous substances. The common herbicides 2,4D and 2,4,5T were found in the 1960's and 70's to be contaminated with dioxin, and therefore this toxic human carcinogen may have been introduced to the environment-at-large as an indirect result of the widespread use of its herbicidal carrier. In some cases, valuable resources like soil or groundwater can be polluted with pesticides. Pesticides that are water soluble can be leached into groundwater, while yet other pesticidal compounds attach to organic matter or soil particles, which can then be eroded or washed away into surface waters.

A large proportion of the pesticides manufactured over the last 40 years were used for agricultural pest control. Although some pesticides are not typically used in Ohio, a wide variety of types and formulations of pesticides may be found stored, disposed of, or released in other ways to Ohio's environment. In any case, the CP should be aware that these chemicals can exist in the environment, and may well affect sites being investigated and cleaned up under the VAP guidelines. With an increase in the development of land previously in agricultural land use and redevelopment of sites in rural areas, there is a higher probability that some of these non-urban sites may be eligible for investigation and remediation under the VAP. Properties which have a history of agricultural land-use, or commercial sites that may have stored agricultural products both have the potential to be contaminated from applications or an uncontrolled release of pesticides. Depending on the findings of the Phase I and II property assessments, the pesticides may be subject to contact and cleanup standards issued by the Ohio EPA.

As in Rule 3745-300-06(A) of the OAC: "The purpose of a Phase I property assessment is to determine whether there is any reason to believe that a release of hazardous substances or petroleum has or

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may have occurred on, underlying, or is emanating from a property including any release from management, handling, treatment, storage, or disposal activities from on or off-property activities". When the CP has reason to believe that properties previously in agricultural land-use, which has also stored or received pesticide applications, a diligent inquiry as described in Rule 3745-300-06(C)(1)(a) of the OAC, should address pesticides and their use or misuse at the site. The specific types of pesticides used can be determined from spraying records, inventory sheets, inspection of storage areas for full or empty containers, or other site-specific circumstances. The issue of sampling soil, water, and air for pesticides is outside of the scope of this document; however, guidelines on sampling for pesticides in the environment can be found in numerous state and federal EPA publications.

The nature of agricultural production can involve residential, commercial, and industrial forms of activity, and therefore the assessment of related properties presents a unique challenge to the CP. Agricultural production requires a wide range of support services, which include machinery maintenance, pesticide storage and application, and treatment and storage of farm products. Therefore, a broad range of potentially hazardous substances can be present on properties which are either in agricultural land-use or previously used for agricultural production activities. These potentially hazardous substances are introduced to the environment through spills, improper use, or improper storage. Properties with a history of agricultural land-use and their associated potential hazardous substances include, but are not limited to:

- Grain mills: Pesticide transport, fertilizer transport, fueling station (petroleum, TPH), proximity to surface water and sub-surface drainage tile, general high traffic area, long historic association with bulk chemicals and fuel.

- On-farm machine shop: A wide variety of hazardous substances or petroleum compounds may be found in locations including fueling stations, areas used for solvent and coolant disposal, motor oil storage and disposal, greasing pit, junk or salvage storage areas.

- On-farm sprayer fill pad: These areas are designated for pesticide use and may be contaminated from long-term handling and mixing of concentrated pesticide products, rinse water from tank cleaning (large quantity water use may raise runoff and ground water issues). The CP

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should also check for an underground storage tank holding rinse water and other effluents.

- Orchards, small fruit culture: These areas are used for the production of high-value fruit and vegetable crops. Pest management is typically more intensive, and often calls for frequent applications of pesticides, and in particular fungicides and insecticides. Orchard and vineyard sites that were active prior to WWII may have significant concentrations of lead, arsenic, and their salts due to the widespread use of inorganic compounds for insect control. Additionally, it is possible that some properties may have high residual concentrations of organochlorines such as DDT products, which were widely applied during the years 1940 to 1972. The degradation products of these organochlorine pesticides may also be considered hazardous substances.

- Field crops: Pesticides and their residues are not ordinarily of concern in row-crop agriculture. In these systems, application rates are typically smaller and periodic plowing would increase soil contact with pesticide residues and therefore accelerates the decomposition of these residues.

- Livestock production: In recent years, the scale of livestock production has increased greatly. With more animals per unit area, this requires more intensive maintenance of the animals themselves and the facilities that they live in. The CP should make special note of records pertaining to or evidence of pesticide use, disposal or burial of carcasses, and animal waste lagoons which can overfill with rainwater and produce runoff contaminated with manures.

This is a partial listing of agriculturally-related property use or activities that may be vulnerable or subject to uncontrolled releases of or contamination from materials which may also be identifiable as hazardous substances. There is some chance that a Certified Professional (CP) will come across a property which has been exposed to pesticides by intentional applications or spills. Although it is very unlikely that residues from normal pesticide applications made a few years ago would be detectable, it is more likely that spills, improper storage, or more recent applications may contribute to contamination.

SUMMARY: For VAP sites with a history of agricultural land-use, the CP should assess the property with particular attention paid to practices that may have resulted in over-application, spills, or improper storage of

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pesticides. For further information on pesticides and their use in Ohio agriculture, the CP should make a point of obtaining related VAP TGC documents, contacting county extension personnel and Department of Agriculture divisions concerned with pesticide applicator certification and pesticide registration, or a regional Natural Resources Conservation Service office. Each of these resources can be helpful regarding local and regional pesticide use issues, which may pertain to sites administered under the VAP.

CONTACT: For any questions concerning this issue, please contact the VAP central office at (614) 644-2924.

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