

# Old MacDonald Had a Farm, E I E I Uh-Oh

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New Jersey's nickname is "The Garden State," but today's shopping malls, multi-lane highways and swaths of McMansions have nothing to do with gardens. It's easy to forget that throughout much of the 20<sup>th</sup> century, New Jersey was populated with small farms and orchards. Before we get carried away by nostalgia, let's acknowledge an issue we at ESA frequently encounter: pesticides in land formerly used for farming. Old MacDonald's farm may have looked quaint back then, but residual pesticides can disrupt your real estate transaction today. What steps can you take to ensure your deal doesn't "buy the farm"? That's our topic this month.

## **So, What Exactly Did Old MacDonald Do On His Farm?**

Throughout the 20<sup>th</sup> century -- especially following WW II -- farmers responded to an increasing demand for food. In densely populated places like New Jersey where land is precious, this need was satisfied by increasing agrarian production through the use of chemical fertilizers and pesticides. These chemicals were used routinely and consistently. (Some of the information presented here was gleaned from *Findings and Recommendations for the Remediation of Historic Pesticide Contamination*, March, 1999. State of New Jersey. <http://www.state.nj.us/dep/special/hpctf/>.) Up until the 1960's, pesticide use was strongly advocated by the United States Department of Agriculture and the New Jersey Agricultural Experiment Station.

During the early 20<sup>th</sup> century most pesticides were arsenic-based. These arsenical pesticides were widely used, especially in orchards, and often "more was better." One of the more effective arsenic compounds was lead arsenate, a deadly combination of two metals: arsenic and lead. Calcium arsenate was also used. Arsenicals fell into disfavor around 1967 with the advent of organochlorine pesticides. Organochlorine pesticides were effective at lower application rates, making them less expensive.

Following WW II, the economy boomed and returning soldiers sought to emigrate from the cities, beginning the phenomenon called suburbanization. Because of this impetus, farmers began selling their land to developers who were eager to satisfy the increasing demand for single-family housing and eventually commercial offices. And thus, the real estate boom began.

## **When do pesticides become an Uh-Oh?**

Two factors make historic pesticides problematic: persistence and toxicity. Metals like arsenic and lead are elements that simply do not break down, meaning that they persist in the environment indefinitely. Organochlorine pesticides, while also persistent, will eventually break down after a number of years. Some organochlorine pesticides are largely insoluble. They also tend to bind to clay particles and organic soils. This means that residual pesticides are normally

found near the soil's surface and are thus a nominal threat to ground water. However, arsenicals, being metals, are prone to leach when exposed to acidic soils (such as those found in the New Jersey Pine Barrens), and in that fashion they have a greater likelihood of impacting ground water.

### **What Does This Mean When Buying or Selling Real Estate?**

Buyers and sellers of real estate commonly perform due diligence. Regardless of the form of due diligence selected (an ASTM Phase I or a Preliminary Assessment), the findings should be the same. And among the things routinely investigated is whether the property was once used for agriculture. And if the answer is "Yes," then regulatory guidance dictates that a few soil samples should be taken to look for residual pesticide impacts.

### **What Should Be Done?**

What does environmental sampling entail? It almost always involves soil sampling and, less commonly, groundwater sampling. When soil sampling is performed, you need to allow at least a month to schedule the work and receive analytical results from the laboratory. Upon receipt, there could be a need for more sampling and a final report. So in total, the process could take two to three months.

Sampling frequency depends upon the size of the site: for sites 1-10 acres in size, one (1) sample is taken for every two (2) acres with a minimum of two (2) samples. For sites larger than 10 acres, an additional sample for every five (5) acres is required. A reduced sampling frequency may be appropriate for very large sites. Discrete samples are taken at a depth of zero to six (0-6) inches within farm fields. If the extent of former fields cannot be determined, the entire property should be sampled. All samples are normally analyzed for arsenic, lead and pesticides

### **What Degree of Risk Is Posed by Residual Pesticides?**

The answer is not black and white because it depends both upon what form of pesticide exists and in what concentration. ESA would need to examine the anticipated use of the property. In most instances, ESA finds that residual pesticides are sufficiently low (or non-existent) whereby no risk is posed. But situations do occur, albeit infrequently, where remediation is warranted. In addition, be aware that there are areas of New Jersey where arsenic is naturally occurring. As a result, ESA is careful to discriminate between arsenic that is naturally occurring versus that which is derived from a pesticide.

Ultimately, when we determine that former farmland has little or no residual pesticide contamination, all parties are pleased and deals proceed smoothly.

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