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Organic Pesticides

Abstract:

The USDA allows for the use of pesticides in both conventional and organic agriculture. Generally speaking, conventional farming can use synthetic substances where organic farming is restricted to natural substances. Both forms of pesticides can have negative health affects. However, when used correctly they both are safe. This article examines three organic pesticides. It also provides suggestions to help reduce the amount of foreign substances that are on the foods we eat.

Organic Pesticides

Monsanto, Valent, Bayer CropScience, Dow AgroSciences, and DuPont- these titans of industry are leaders in the field of pesticides. They produce products such as Roundup®, Select®, Rovral®, Dithane® and Asana®, products that are surely ruining the environment and contaminating foods with carcinogens and toxins. But are they really that bad? Not according to the Environmental Protection Agency (EPA). The EPA has determined that all of the previously mentioned products are either Type II or Type III in toxic rating, the most toxic label being Type I. The risk of endangerment from these products is so low that any person off of the street can buy and use the products and be safe (as long as they follow the label directions). A consumer may think, “OK, so maybe these products are labeled as safe, but they still have a toxic rating of

Type II or Type III. I think that I will just buy organic and eliminate synthetic pesticides all together.” This logical consumer could be making a fatal mistake. Many of the pesticides that are approved for organic use by the USDA have the same or worse toxic ratings as the aforementioned synthetic pesticides. The natural, organic pesticides can have carcinogenic effects as well. It was reported by the University of California, Berkeley that about half of the natural pesticides are carcinogenic; this is roughly the same as synthetic pesticides. Harmful pesticides can be used in organic production, therefore caution should be taken when selecting and eating organic foods.

There are many different types of pesticides that can be selected for organic use that can have negative affects on health. One type of pesticide that can be used in organic production is a copper compound. Copper products are used on the plants as a type of fungicide. These pesticides with copper products pose a large threat to humans. Although the element can be beneficial to human nutrition, large levels of copper can be toxic and fatal, especially with prolonged exposure. For example, a study conducted by Extoxnet in 1996 found that, “Vineyard sprayers experienced liver disease after 3 to 15 years of exposure to copper sulfate solution”. There are different toxic ratings for different types of copper products. The rates range from Type I, Copper hydroxide and copper sulfate that receive labels of “DANGER” to Type III, Copper oxide, which is labeled only “Caution”. Another product that also received a Type III rating is Kaolin Clay. This product works by creating a film on the plant that protects it from insects. Although this form of pesticide is non-toxic, it does present health risks during application. The dust that is created during application can cause lung damage.

Although these products all can present a health risk, with proper use and following labeled directions, the products should be safe to use.

One of the more scary pesticides that was used in organic agriculture is rotenone. Rotenone was used as an insecticide to control insect infestations. The pesticide is a naturally occurring substance, found in the roots of warm weather trees. It works by acting as a general inhibitor of cellular respiration. Because rotenone is found in trees, and made naturally, it was originally allowed for organic use, although under strict use as a Type I. Many of the studies found adverse affects of rotenone. Rotenone presents a large environmental hazard; the pesticide is very toxic to fish and aquatic life. The product is also harmful to animals. In order to help determine the safety of rotenone in humans, numerous tests have been conducted on lab animals. The results are quite disturbing. It was discovered that chronic exposure to rotenone causes growth retardation and vomiting in dogs and rats. The affects of rotenone as a tetragon were inconclusive. However, birth defects were seen in rats. The most disturbing affect of rotenone was on the neurological system of lab animals. A study conducted in 2000 found that rotenone cause neurological deterioration almost identical to Parkinson's disease. It is disturbing to think that up until 2005, when rotenone was taken off of the approved list of organic pesticides, produce which many believed to be pesticide free contained such a nasty and toxic substance.

For every organic pesticide such as rotenone that has potentially very negative affects, there are others that are safe to use. An example is *Bacillus Thuringiensis* (Bt). This certified organic compound has no ill health effect on humans or wildlife. It specifically targets only the problematic insects. Although Bt is an example of a safe

pesticide, it is important to realize that there can still be foreign substances on products that are certified USDA organic. There are things that can be done to reduce the risk of ingesting pesticides, whether they are organic pesticides or synthetic. One very useful technique is to simply wash off all fruits and vegetables that you eat before preparing them. Many of the chemicals that are applied are water-soluble. This simple act of rinsing with water can reduce the residues of pesticides dramatically (73% reduction with peaches). Another tip to reduce ingestion of pesticides is trimming of the food. This can reduce residue on lettuce by almost 90%. A third way to remove pesticides is heating the produce. This may not always be practical but many chemicals are also heat sensitive and decompose when heated. The best way to know what is going into your body is to get to know your farmer. Talk to you local CSA farmer and find out what types of agriculture practices they are using. Not only can you learn about the pesticides they may be using, they are also a wealth of knowledge in all things grown on their farms!