

Monsanto

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DATE: December 16, 1982

SUBJECT:

REFERENCE:

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Enclosed is a simplified, boiled-down fact sheet on dioxin, written for lay consumption. The first two pages contain the essentials. Page three is optional

If I can help further, please let me know.


Dan R. Bishop

DRB:ec

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Dioxin Fact Sheet

The word "dioxin" actually refers to a family of chemical impurities unintentionally formed as contaminants during the manufacture of certain pesticides and industrial chemicals. The formation of 75 different dioxin compounds is chemically possible.

The toxicity of individual dioxins varies considerably across a broad spectrum of animal species. One dioxin in particular is the source of considerable public concern because it is known to be highly toxic in tests with laboratory animals. The chemical name of this compound is 2,3,7,8 tetrachlorodibenzo-para-dioxin but it is usually referred to as TCDD or simply dioxin.

The "acute animal toxicity" of dioxin -- that is the amount that will cause immediate poisoning -- differs considerably from one animal specie to another. In the guinea pig, the laboratory animal found to be the most sensitive, a single oral dose of an extremely minute amount (in the billionths of an ounce range) may prove fatal. However, other test animals, such as rabbits, dogs and hamsters, can tolerate doses ranging from 100 to more than seven thousand times more than that which can kill a guinea pig.

Laboratory studies have also shown that test animals, fed daily doses of dioxin in their diets for prolonged periods of time, have experienced other serious health problems including cancer and birth defects.

From the human experience, it's clear that man is much more tolerant of dioxin than most, if not all, animal species. Since no human is known to have ever died from dioxin poisoning, the amount required to kill a human is unknown. However, much is known about other human health effects.

The Journal of the American Medical Association (JAMA) reported on Oct. 15, 1982, that there is no scientific evidence that dioxin has caused cancer or birth defects in humans.

This statement is based in part on findings from many health studies, some done recently, on sizeable groups of people known to have been exposed to relatively high levels of dioxin, going as far back as 30 years. These studies found no increased cancer rates or other long-term health problems except a persistent acne-like skin condition attributed to exposure to dioxin.

This skin condition, known as chloracne, is the hallmark (or visible indication) of both acute and chronic toxic exposure to dioxin in humans. Chloracne manifests itself shortly after exposure (usually within 2 to 3 weeks) and, in its milder forms, is characterized by clusters of blackheads over the cheekbones, around the earlobes, on the face, chest and back. In severe cases, pus pockets, large cysts and scarring have occurred. In some industrial workers, chloracne has persisted for up to 30 years, but mild cases usually clear up shortly after exposure ceases.

In summary, the preponderance of medical evidence published in the scientific literature indicates that chloracne will manifest itself in humans exposed to toxic levels of dioxin. In the absence of chloracne, other adverse effects are improbable.

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In the environment, dioxin tends to bind itself to soil particles making it a fairly immobile substance. It is not mobile or soluble in water either. Rather, it settles to the bottom of rivers and streams, binding itself to the silt or sediment. This characteristic prevents it from contaminating drinking water supplies. However, fish that feed on the sediment can become contaminated. In recognition of this, the U.S. Food & Drug Administration has established 25 parts-per-trillion as the maximum amount of dioxin permitted in fish for human consumption. Dioxin has a high boiling point (about 500 degrees Fahrenheit), thus it is not volatile. This makes human exposure through inhalation highly unlikely. The most likely route of human exposure is by absorption through the skin from direct skin contact with contaminated soil. Ingestion is also a possibility, especially by children who tend to put their fingers in their mouths.

Sunlight destroys dioxin's toxic properties rapidly on plant and soil surfaces. The length of time required to break it down into harmless components below the surface ranges from several months to many years, depending on a number of variables.

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