

Times Beach and Imperial, Missouri have been major news stories over the last several months. These reports have provided a great deal of insight into the facts that led to the decision by the Federal government to "buy out" Times Beach for \$33 million.

1. The contamination by dioxin (2,3,7,8 TCDD) resulted from irresponsible waste disposal.
2. Levels of up to 740 parts per billion of dioxin were measured in the soil.
3. The contamination has existed for 11 years.
4. No human health effects have been observed.
5. The Center for Disease Control set a safety limit of one part per billion in soil. A number of scientists have expressed the opinion that this limit is unduly conservative. It is believed that this limit was set to protect children who have a disorder called Pica, which causes them to eat dirt on a daily or regular basis.

Vietnam veterans have criticized the inconsistency of one government agency buying out Times Beach, while another government agency refuses compensation for illnesses they consider related to exposure to dioxin in Agent Orange. For this reason, a comparison of the two situations is appropriate.

 Air Force tests have shown that when Agent Orange was sprayed on jungle foliage, 94% of the defoliant was deposited on the foliage, and only 6% penetrated to ground level. It is well documented that dioxin in thin films, exposed to sunlight, has a half life measured in hours. Therefore, it is likely that 94% of the dioxin in Agent Orange would have been photodecomposed the first day. The dioxin that reached the soil would be subject to slow degradation, and could be measured. The standard method of measuring would be to analyze the amount of dioxin in the top centimeter of soil. To our knowledge this has not been done in Vietnam, and degradation may now have removed all traces of the dioxin.

However, if the dioxin level in Agent Orange is known, the resulting soil level can be calculated. In the case of Dow manufactured Agent Orange, the level was known to be less than 1/2 part per million. Later tests with more sensitive analytical capability on surplus Dow Agent Orange, show that the actual level averaged .12 parts per million.

In order to lend validity to the calculation, lets adopt the absolute "worst case" assumptions. Lets assume there was no foliage or grass, and no sunlight present at the time of spraying. Lets assume that no degradation of any type took place. And finally, lets assume that all of the dioxin was deposited in the top millimeter, instead of the top centimeter.

Under these implausible conditions, the resulting dioxin level in the top millimeter of soil would be .293 parts per billion. This is less than 1/3 of the level that CDC believes is safe for children who eat dirt regularly. This is 400 to 2500 times less than the level of dioxin that caused no injury after 11 years exposure in Times Beach and Imperial, Missouri.

Incidentally, if 94% of the dioxin was photodecomposed and the remainder entered the top centimeter of soil, the level would be less than 2 parts per trillion. This is about one half the amount that is found in urban areas like Detroit and Chicago and are presumed to come from combustion sources.