

1. How many board feet of lumber are treated with Penta in the U.S. each year?

The latest available figures relate to Penta treatment during 1971.

<u>Product</u>	<u>Cubic Ft.</u>	<u>On Board Ft.</u>	<u>% of Total</u>
Utility Poles	56,788,000		52%
Crossarms	7,602,000		86%
Fence Post	12,596,000		46%
Piling	1,399,500		4%
Lumber		215,392,100	25%

2. What is the expected increase in cost to produce "clean" Penta?

The increase in cost to produce a clean Penta is estimated at about 4¢/lb., representing an increase of 25-30%. A significant item which is difficult to estimate at this time is the cost of handling and disposing of the concentrated dioxin residue. Ideally, disposal should be accomplished by high temperature incineration. Commercial units capable of achieving the proper incineration conditions for the disposal of solid wastes of this type are not now available.

3. What is the dioxin content of the current Penta and what is the projected dioxin content of the "clean" Penta?

Monsanto analyses of samples of currently available Pentachlorophenol show the following chlorinated dibenzo dioxin content:

Tetrachlorodibenzo-p-dioxin	0.2 ppm
Hexachlorodibenzo-p-dioxin	25-65 ppm
Heptachlorodibenzo-p-dioxin	300-500 ppm
Octachlorodibenzo-p-dioxin	2500-5000 ppm

The projected chlorinated dibenzo dioxin content of the modified Pentachlorophenol is as follows:

Tetrachlorodibenzo-p-dioxin	Non-detectable
Hexachlorodibenzo-p-dioxin	< 1 ppm
Heptachlorodibenzo-p-dioxin	< 1 ppm
Octachlorodibenzo-p-dioxin	1-2 ppm

4. How much capital does Monsanto have invested in its Penta facilities:

Monsanto's gross investment in Pentachlorophenol facilities is approximately \$5 million.

5. What can we say about the safety aspects of current Penta? How does it compare to the proposed new product?

There have been hundreds of millions of board feet of Penta-treated wood produced in the U.S. during the years that Monsanto has participated in this market. The manufacturer of the treatment chemicals, the wood treating industry itself, and the ultimate users have developed an amazing record when one considers the hazardous properties of treatment chemicals, of which Penta is one. Our records indicate that the problems we have faced in the manufacture of Penta and the reported problems of our customers have been largely through accidental exposure or accidental discharge. In all such cases the effects produced would have been the same whether the product used had been current commercial grade or proposed "purer" grades, since these problems were principally the result of the inherent toxicity of Penta itself.

From time to time there have been reported cases of chloracne in workers exposed to current commercial Penta. In the vast majority of these cases the problem occurred in a Penta producer's plant and the incident was traceable to a specific operational upset. It is possible that the proposed "purer" grades may not pose this problem. It is absolutely certain that very careful operation of current producing plants can eliminate this problem.

If the chloracnegenic potential of Penta is due to contaminants in the commercial grade products and is, as is claimed, removable through some mechanism of contaminant concentration, then this potential will be seriously magnified in the producing plants through handling of concentrated contaminant residues. It is doubtful, therefore, that the problem of chloracne can be eliminated completely from Penta producer's plants regardless of what grade of Penta they produce without careful operation.

The wood treating industry and their customers, in our opinion, will not be seriously affected from a handling hazard standpoint with either grade of Penta so long as they handle the treatment chemicals with the care they have already exhibited. Or, conversely, poor handling techniques will lead to problems with the workers in a plant regardless of the grade of Penta used because of the inherent toxicity of Penta itself.

The efforts of current Penta producers and enlightened wood treaters have produced an admirable record in this industry. It is our opinion that, regardless of the grade of Penta used, any relaxation of this effort will lead to trouble. It is indeed unfortunate that the word "pure" or "purer" has been used in respect to differing grades of Penta since such words tend to lead to a relaxation in safe handling procedures. It is, of course, necessary to handle Penta with respect regardless of the grade used.