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WATER-BORNE FINISHES

Ref: Your letter of December 17, 1970.

As W. S. Zimut has indicated, very few states have set up water pollution regulations. The regulations that have been passed are concerned primarily with the concentration of toxic metals in effluents. Texas has passed a regulation limiting mercury to 5 ppb in effluents, and Illinois has proposed a regulation limiting mercury to 0.5 ppb in effluents (this is below the ambient level of about 2 ppb found in Illinois waters).

The Federal Government is currently gathering information on the amount and types of materials likely to find their way into American waters. A questionnaire has been sent to 10,000 plants asking for information on the amount of fourteen different heavy metals, phenols, amines, chlorinated biphenyls and cyanides present in waste effluents. Based on this survey and other pertinent information, it is expected that some sort of water pollution legislation will be introduced in the 92nd Congress.

Although it is difficult to predict exactly what type of legislation will be passed, some general guidelines can be set down based on what we now know:

- I. **Mercury** - Current regulations and public opinion dictate that we do not use mercury in our products in any form, unless it is absolutely necessary. Mercury is currently used only as a preservative. I would suggest that less toxic preservatives be used if and when they become available.
- II. **Lead** - It appears that many and perhaps all paints may be limited to a maximum of 1% lead. This essentially says that we should avoid lead-containing pigments since they can give as much as 25% lead based on solids in the finished product. Small amounts of lead as driers would not be effected if the maximum stays at 1%. Since there is always the possibility of more stringent regulations, use of lead-free driers should be considered first to avoid possible reformulation at a later date.
- III. **Cadmium and Arsenic** - Along with mercury and lead, these two metals have come under increasing pressure for regulation. I believe we use cadmium and arsenic only in pigments. If possible, pigments containing these metals should be avoided in future formulations.
- IV. **Other heavy metals** - Information has been requested by the Federal Government on the use of Antimony, Barium, Beryllium, Bismuth, Chromium, Cobalt, Copper, Manganese, Nickel, Selenium, Thallium and Zinc in waste effluents. We do not use many of the more toxic metals (Beryllium, Thallium, etc.). It is doubtful that regulations will appear to limit the use of products containing the more commonly used metals (Cobalt, Copper, Manganese, Nickel, etc.). However, it is possible that we will have to limit the concentration of many of the metals in our waste effluents during the manufacture of our products.
- V. **Phenols** - The drinking water standard for "phenols" is 0.00/mg/l in potable water. This limit was set because of the undesirable taste often resulting from chlorination of water containing extremely low concentrations of phenols. A letter from the Department of Health, Education and Welfare states, "It (the Standard) is intended to include all those compounds capable of yielding distasteful products when chlorinated and is not intended to include all ring hydroxylated aromatic compounds". Thus, the standard would not apply to phenols used in epoxy resin manufacture (bisphenol A, bisphenol F, etc.) since they are not readily chlorinated. As far as I know, the only material we use that is effected by this standard would be the preservative, pentachlorophenol.

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In moving from organic to water-based finishes, we have to be aware of the water pollution problems that might be encountered. I have tried to outline the types of materials I believe most likely to be important in future water pollution legislation. By following pending water pollution legislation and using materials least likely to cause water pollution problems, I feel we can substantially reduce total pollution control problems by moving from organic to water-based products.

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WWM:lhv