

LEAD INDUSTRIES ASSOCIATION, INC.

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LEAD CHROMATE IN YELLOW TRAFFIC PAINTS

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INTRODUCTION:

As a manufacturer of basic chromium chemicals, and a major supplier of these chemicals to the pigment industry, the Solvay Process Division of Allied Chemical Corporation has, for some time, been aware of the general usage decline in that series of pigments consisting principally of lead chromate. According to Bureau of Census figures, decrease in production of the lead chromes (Chrome Yellows) during the period from 1955 to 1960 amounted to 6000 net tons of pigment. This represents a market loss equivalent to more than 3800 tons of lead and 2700 tons of sodium dichromate.

Although a number of factors have jointly contributed to the reduction in use of the lead chromes, probably two are outstanding: first, the low alkali resistance of these pigments in a rapidly expanding alkaline latex paint market; second, ever increasing legislation against the use of lead-bearing pigments in trade sales paints.

In time, and with considerable research effort to offset these and other detriments, a portion of this lost market may be regained. There does exist, however, an immediate, potentially large, and virtually unexplored outlet for lead chrome pigments in the field of yellow traffic paints.

YELLOW VS. WHITE

The use of yellow to denote "caution" is practically universal, and traffic control is no exception. It is indeed this psychological connotation which has been largely responsible for the use of yellow traffic markings in the past, and it will continue to be a major factor in the future. This property belongs to the yellow color only, and cannot be duplicated with white markings.

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Look Ahead with Lead

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An equally important but less obvious factor in traffic marking is visibility. According to a recent report by an independent research group which tested driver reaction to both yellow and white markings in the State of Pennsylvania, yellow traffic markings were found to be from 35 to 50 percent more visible than white under all weather conditions.

PRESENT USE OF YELLOW MARKINGS

Obviously, the use of yellow traffic markings is not new. Most States have in the past and presently continue to use yellow markings for special areas, including approaches to road obstructions, railroad crossings, and "no-parking" zones. Some States employ solid yellow center lines, usually in conjunction with white markings, for "no-passing" areas. Not until recently, however, was the choice of yellow markings in a standard system anything but optional.

In 1961 a new Manual on Uniform Traffic Control Devices was adopted by the Joint Committee on Street and Highway Safety. The Joint Committee is comprised of both State and Federal highway officials and traffic engineers. According to the Manual, yellow is now prescribed for "no-passing" barrier lines, for double center lines on four-lane undivided pavements, and for curb painting in areas where parking is prohibited. All 50 States are expected to conform to this new standard.

In terms of the increased market for lead chromate associated with the new marking practice, total lead consumption should advance by about 1500 tons, and sodium dichromate by approximately 1000 tons annually, with little or no promotional effort on the part of either lead or chromium chemical producers.

HIGHWAY EDGE LINING

The increased emphasis on yellow barrier and curb markings as prescribed by the new Manual does not end the potential for lead chromate in the traffic paint market. Still to be considered is the entirely new concept of highway edgelineing.

Edgelineing (or edgemarking) had its beginning less than 10 years ago in the State of Connecticut. There, under the auspices of the Dorr Foundation and the Connecticut State Highway Department, a few test edgelines were installed in 1953. The purpose of the program was to determine the effectiveness of these lines in reducing traffic accidents and fatalities on today's high speed roads. Acceptance of the edgeline, on the part of motorist and highway engineer alike, can best be described by noting its phenomenal growth from a few test lines in 1953 to over 100,000 miles of road at the present time. This practice alone accounts for a present annual paint market of about 3-1/2 million gallons, and shows every indication of continued growth.

As was true of conventional barrier markings, the concept of yellow edgemarking is not altogether new. A number of States have, in the past,

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used solid yellow edgelines to mark the breakdown lanes on major traffic arteries. At least two States, Connecticut and Utah, used yellow edgelines as a matter of policy and resisted the change from yellow to the now standard white line, contending the yellow was both more effective and visible. In the interest of national uniformity, however, these States had no alternative but to convert to white as specified in the present Uniform Manual on Traffic Control Devices.

The only argument against yellow edgelineing which has been voiced to date is this --

According to accepted marking practice, a solid yellow line on the motorist's side of the road cannot legally be crossed. Since edgelines are essentially a guide, and do not necessarily indicate that a driver cannot legally cross them to reach the road shoulder, the use of solid yellow edgelines would be both contradictory and confusing to drivers.

In reply to this argument, we would like to propose an entirely new marking concept - that of the dashed yellow edgeline.

The dashed yellow edgeline would incorporate all of the advantages associated with yellow markings, including visibility and safety features, but would not conflict with established marking standards. By its very nature, a dashed yellow edgeline would imply that it could be crossed with caution. As an added bonus, the use of a dashed line, instead of a solid line, could reduce paint cost by as much as \$30 per mile, depending on line length and spacing.

Based on present marking practice, the annual market potential for lead chromate in dashed edgemarking is in the order of 4500 tons. This quantity of pigment represents nearly 3000 tons of lead and 2000 tons of sodium dichromate annually.

Since obtaining this market would benefit both lead and chromium chemical producers, it appears that a mutual effort is in order. It was indeed with this thought in mind that we first contacted Mr. Ziegfeld and Mr. Borcins of your Association. We were happy to find that LIA was also working along these lines and was most enthusiastic about this application.

The estimated potential market for 4500 tons of lead and 3000 tons of sodium dichromate annually in yellow traffic paints cannot be overlooked; and we trust that our efforts in promoting this application will be rewarded in years to come by eliminating the need to "wonder where the yellow went".