



INTERNAL CORRESPONDENCE

CHEMICALS AND PLASTICS
ENGINEERING

P. O. BOX 471, TEXAS CITY, TEXAS 77590

February 9, 1979

(10 cc)

JIM SUPP - FORGOT MY 6/10/79 MEMO TO YOU.

220/01-679.

TO: L. J. Kunke
Building 114
Texas City Plant

SUBJECT: Comments on Chloride Stress
Cracking Formula From Vinyl
Chloride Safety Association
Meeting - October, 1978

Dear Jim:

I found the analysis of stress-corrosion cracking susceptibility which came out of the Vinyl Chloride Safety Meeting to be on the one hand amusing and on the other hand frightening. It is amusing because it is in my opinion, a very amateurish analysis of the problem. It is frightening because of the analysis would lead one to believe that the stress cracking problem could be treated with a mathematical formula and stress cracking problems solved through consideration of some process conditions.

I would like to vigorously protest the safety association getting involved in the technology of corrosion. If corrosion is a problem that the safety association wishes to address, it should hire professionals or involve professionals of their own organizations. I wasn't sure I believed what I was reading so I circulated this document to all of the Materials Engineers in my organization. Without exception, they returned negative comments, based both on their theoretical understanding of the chloride stress-corrosion cracking phenomenon, and on their own experience. We do not have the time and do not wish to fill out another chloride stress cracking questionnaire. We have been filling these things out for various organizations in our own corrosion society for at least 15-years; all to absolutely no avail because the conditions that actually cause stress-corrosion cracking are not characterized by ordinary process analysis.

The chloride stress cracking of stainless is such a complicate phenomenon that today there is still no uniform acceptable theory for the mechanism. And in fact, it may be that there is more than one basic mechanism which can take place, depending upon a multitude of circumstances which develop on the metal surface at any one specific point.

The application of risk analysis and risk management to this particular problem, I feel it is entirely out of place and misguided. I know the Senior Corrosion Engineer at Stauffer and some of the corrosion people at Exxon Chemicals USA and find it hard to believe that either of them would subscribe to this approach. It looks like Mr. Allen and Mr. Lawless are having a little fun in

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playing around with this, if they are serious about combating stress-corrosion cracking in vinyl chloride processes, they should involve their Materials and Corrosion people.

Specifically, it's well understood that oxygen does promote stress-corrosion cracking in aqueous, chloride systems. Increasing temperatures increases the corrosion rate and stress-corrosion cracking follows that pattern. 316 is not believed to be significantly better than 304. However, in any one specific environment, 304 may be better than 316, or 316 may be better than 304. To try and generalize this matter is useless. I noticed in the graphs, the final sentence says "no guarantee can be given due to the fact of other variables not yet quantified". That's absolutely true and is probably even more true than the authors realize.

Jim, obviously these are my comments to you and I don't think they are appropriate for publication to the safety association. If you feel in the light of this discussion that you would like something from me to present to the association, I will work with you on it. Thanks for letting me see this.

Regards,

A handwritten signature in cursive script, appearing to read "W. G. Ashbaugh", followed by a small, less legible mark.

W. G. Ashbaugh

WGA/ad

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