LETTER TO THE EDITOR

SOLUBILITY OF METAL CORROSION PRODUCTS

Dear Sir:

In *Nucl. Appl. Tech.*, **8**, January 1970, there is an article on p. 58 entitled "The Dissolution of Metal Corrosion Products in Deionized Water at 38°C (100°F)," by Barbara A. Johnson. In this article, data are given on the weight change of copper test pieces in "deionized water" at 38 and 43°C. There is no mention of whether or not the water was free of dissolved gases, especially oxygen. Likewise, missing are data on the pH or resistivity of this deionized water.

In the book, *Solubility of Inorganic and Metal-Organic Compounds* (Seidell), edited by Linke, 4th ed., 1958, on p. 904, data are given on the solubility of copper in thoroughly degassed water free of dissolved substances. The copper was electrolytically pure, polished, degassed, and pulverized, and the tests were run for 6 and 29 days at 30°C. The solubility of the copper found by analysis of the water was 166 gammas per liter for 6 days and 177 gammas per liter for 29 days. In the article by Barbara A. Johnson, the solubility can be calculated to be 1015 gammas per liter if the total area of the copper sample were 12.95 cm^3 (assuming a thickness of 0.6 ml) or 971 gammas per liter (assuming a sample thickness of 0.05 ml). Referring to Fig. 1, the copper curves tend to become constant at 0.15 mg/cm^2 at 38°C. Assuming a 0.6-ml thickness, one can calculate a total weight loss of 2.03 mg. This does not agree very well with the value of 2.4-mg weight loss, given in Table II.

There was not an opportunity for me to search the literature concerning solubility data for the other metals which were used. A comparison with the previous literature would be useful.

From some rather crude observations, I have discovered appreciable corrosion of copper using deionized water. I am not aware that anyone has discussed the possibility of traces of organic compounds in deionized water. If such materials were present, even in very small amounts, they might appreciably affect corrosion results.

C. Rogers McCullough

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Corrigendum

On March 5, 1970, Paul Zigman, president of Environmental Science Associates, requested that we publish the following corrigendum that appeared in the biography of E. Tochilin in the March issue of *Nuclear Applications and Technology*.

Correct the following:

Page 224, final line of biography under paper title, "Reactor Neutron Measurements with Fission Foil-Lexan Detectors," which presently reads:

...Tochilin is doing consulting on problems associated with radiation dosimetry.

Should read:

...Tochilin is a member of the technical staff of Environmental Science Associates.