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UNIVERSITY OF CINCINNATI
COLLEGE OF MEDICINE
DEPARTMENT OF ENVIRONMENTAL HEALTH

KETTERING LABORATORY
EDEN AND BETHESDA AVENUES
CINCINNATI, OHIO 45219

April 28, 1969

Mrs. Uli B. Monaco, Writer
Good Housekeeping
1356 Madison Avenue
New York, New York 10028

Dear Mrs. Monaco:

I shall do my best to reply usefully to your letter of April 2nd in a general way, and then to answer, as well as I can, your specific questions.

The matter of the introduction of lead into the food and beverages of this and other countries is an extremely complex problem or series of problems, which, generally speaking, is handled fairly well in the U.S.A. There are, however, as there will be in any relatively free society, a number of situations which are difficult to the point of impossibility to eliminate. One of these, as you indicate, is the importation into the country of a variety of food products, processed foods and beverages, packed (in containers) foods, as well as kitchen and dining room (and restaurant) equipment. Let me illustrate - Chinese tea is still packed in lead-lined containers, and has to be watched carefully (by F.D.A.); sardines and other foods are packed in soldered cans; cocoa beans are contaminated with lead in the process of being dried and ground, and so must be watched; American pottery, especially art pottery from sources that have little knowledge and few or no soundly trained technical people, appears in some of our best (upper class) stores. You mention imported (perhaps chiefly Japanese and Mexican, but I am not sure about others)folk pottery and other ceramic ware. It is difficult to deal properly with this matter in relation to both domestic and imported products, but do not be deceived in the belief that this is wholly a matter of imports.

Incidentally, I am no longer the Director of this Laboratory, having retired according to University rules in 1965. By reason of the extensive work of the Laboratory, done under my direction for many years (and still continuing), I am still involved through consultations and correspondence and, in Emeritus status, I continue to work in the Laboratory and to be available. We have, undoubtedly, had the widest experience in these matters, in relation to lead, that any group, with the possible (likely) exception of the Food and Drugs Administration of the Federal Government, has had in this country. In consequence of an experience involving a manufacturer of pottery on the West Coast, we found ourselves in a research and advisory relationship to a group representing the principal manufacturers and suppliers of a tableware in the country, and were able with them to develop a monitoring procedure within the industry whereby the great bulk of domestic tableware must meet a specification which depends upon the systematic application of a standard test procedure. There is nothing, however, outside of this organized effort, whereby any such specification can be applied to the individual entreprenour, usually small and localized. Just how the small producer, artist or craftsman can be controlled - as I say, in a free country - is not apparent. Actually, however, this is not an important source of lead poisoning in the United States, in the sense of relative importance.

Now for your questions.

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1). I am not fully informed as to any steps that may have been taken or proposed

recently for the control of imported ceramic ware. I am visiting the F.D.A. in Washington, D.C. on May 5, and will make the necessary inquiries. My impression is that trade agreements of one kind or another, as matters of National policy, have dictated cautious approaches to restrictions.

2) You are right about the potentiality of being poisoned by lead through one's regular use of badly glazed ceramic tableware. Fortunately, the art ware is seldom used in most households, being reserved for special occasions (parties). The regular types of tableware, as a rule, are good. Certain colored types may be suspected, principally the red and the orange, but this cannot be said to be general. I suppose I have been (and still am) more likely than most physicians to see such cases. I have actually seen two, so that it can be said that not many cases of frank lead poisoning occur from this source.

3) One should be suspicious at once of a "mat glaze." When the glaze has been heated sufficiently, the lead compounds (and certain other components of the glaze) are converted to silicates (essentially glass) which glisten. A mat glaze may result from firing at low temperatures. The wearing of the glaze need not result in bringing soluble lead to the surface. It is the chemical, rather than the physical state of the glaze, which causes it to dissolve in relatively low concentrations of organic acids such as acetic, lactic, malic and citric.

4) It is not the source of the pottery but the manner of its fabrication which determines the availability of lead in the glaze. Moreover, while the temperature of the firing is very important, the composition of the glaze is also important. I am not sufficiently well informed on the technology of ceramic production, but I have learned some things from the knowledgeable people. One of these is that a new formulation is unpredictable in its behavior.

5) Your statement here is almost entirely incorrect. A well-glazed piece of ceramic ware will give up some of the lead in its glaze at any time, under appropriate testing. After a few such extractions, the quantity leached out diminishes, and if it is good enough, the quantity leached out becomes negligible. If, however, the glaze is treated severely, the surface is again susceptible to the same kind of leaching that occurred at first.

On the other hand, a poor glaze, or a badly fired glaze, may continue to go to pieces every time it is subjected to acid leaching.

The acid commonly used for testing ceramic ware for this purpose is acetic acid at about 5 percent strength. Sometimes the test is carried out with the acid at boiling temperature. This, of course, is more severe. This is a very ancient test which was standardized first, I believe, in Great Britain. Vinegar was, at first, the source of the acetic acid, I believe.

I cannot put my hand quickly on references to the literature of this subject. In fact, I have not been concerned with these matters for some time and it would be troublesome (at this time when I am somewhat hard pressed) to find the references. We have not published anything that would be suitable for your purposes. Should you be under some duty to obtain fuller information, however, let me know about it.

Our library is about as complete as any in the country in this field, and our bibliographic staff has been searching the world's literature systematically for more than twenty years.

I have only one further suggestion to make. In writing up your story, you should not, I think, give the impression that our troubles here arise solely out of foreign ceramic ware. There have been several examples of incorrect and improper statements along that line, which have caused embarrassment. Whatever is done about this should be in keeping with what we do about our own.

Sincerely yours,

Robert A. Kehoe, M.D.
Professor Emeritus of
Occupational Medicine

RAK:wp

GOOD HOUSEKEEPING
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Monaco
1356 Madison Avenue
New York City 10028

April 2, 1969

Dr. Robert Kehoe
Kettering Laboratories
Cincinnati, Ohio

Dear Dr. Kehoe,

In the course of researching an article for Good House-Keeping on lead poisoning through imperfect "folk" pottery, I spoke yesterday with Evan Cambell at Los Alamos laboratories. He gave me your name as an expert in the field and possible source of further information. I am writing you, therefore, to ask for any new data either in the scientific, public health, or legal aspects of this problem.

I would also appreciate your thoughts or corrections on the following items, which I believe to be fact:

1) Though the problem has been known for several hundred years, there is no import restriction or inspection certificate for Mexican or other folk pottery brought into the U.S. privately or commercially. Do you know of the possibility of such restriction or inspection, or pressure for it?
2) People who use these ceramics regularly such as Mexicans, may well often get sick from lead poisoning, but the extent of this effect has not been measured on a large scale.
3) There is no way, except by laboratory testing, to distinguish between pottery that leaches lead, and that which doesn't. Pottery surface may wear out and then become dangerous.
4) North American, Indian, or New England pottery, some glassware and ceramics, etc., may also leach lead in small quantities, but not in significantly dangerous ones. Lead poisoning through pottery is eradicated by firing at high enough temperature for long enough.
5) Any ceramic pitcher or cup can be washed in acid a couple of times. (what acid?) thus insuring that it will not leach lead in dangerous quantities. How could this be done in homes?

I realize, Dr. Kehoe, that this is a burdensome list of

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queries, and only hope that you can find time in the next few days to help me out. If you have any printed data or papers which might be helpful, I'd appreciate your sending them along.

Would you send your reply and further data to my home, 1356 Madison Avenue, New York N.Y. 10028?

Again, let me thank you for taking the time and interest to help us tell the public about this small but actual danger. We became interested in the subject through the true story of an actual family, all of whose members almost died before the cause of their illness was diagnosed.

Thank you for your cooperation,

Sincerely yours,

Uli Bergl Monaco

(Mrs.) Uli B. Monaco
Writer
1356 Madison Avenue
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