



DEPARTMENT OF HEALTH AND HUMAN SERVICES

Douglas M. Duncan
County Executive

MEMORANDUM

Carolyn W. Colvin
Director

September 16, 2003

TO: George Leventhal, Council Member
Chairman, Health and Human Services Committee

VIA: *Carolyn W. Colvin*
Carolyn W. Colvin, Director
Health and Human Services

VIA: Lynn L. Frank, Chief *LF*
Public Health Services

FROM: Richard M. Helfrich, Senior Administrator *RMH*
Public Health Services

SUBJECT: Orthophosphate as an Additive to Drinking Water

Thank you for forwarding your questions regarding the Montgomery County Department of Health and Human Services' (DHHS) opinion of the safety of using orthophosphates in the public water supply, as proposed by Washington Suburban Sanitary Commission (WSSC).

As I mentioned at the work session during which WSSC staff presented on the introduction of orthophosphate into the public water supply, DHHS does not have any information indicating there is a public health risk caused by orthophosphates at the concentrations proposed.

Phosphorus is an essential constituent of the human organism, playing an important role in carbohydrate, fat and protein metabolism. Further, the body seems to be capable of processing very large amounts of various types of phosphates without ill effects.

Please note that DHHS does not have any jurisdiction over the public water supply. Nevertheless, we had conversations with representatives of the Maryland Departments of Health and Mental Hygiene (DHMH) and Environment (MDE) in an effort to determine if any short or long term health problems related to orthophosphates existed. Also, we spoke with the Carroll County Health Department where that county's water system has used orthophosphates for two years. Further, we spoke with a federal Environmental Protection Agency (EPA) Region III official, whose agency establishes drinking water quality standards.



Office of the Director

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Our discussions reveal no health concerns with the use of orthophosphates generally, and no health concerns specifically at the concentrations WSSC intends to use (1 mg/l). Our discussions did confirm that orthophosphate is used in many (perhaps 50%) of public water systems. Further, our own experience with the Rockville public water supply, which also uses orthophosphates, has not revealed any illnesses or health complaints related to orthophosphates.

The MDE must approve the addition of any treatment chemical to the water supply (COMAR 26.04.01.33), using the EPA drinking water standards (NSF/ANSI Standard 60). It is my understanding MDE has approved WSSC adding orthophosphate to the drinking water to reduce pinhole type corrosion. Information received from MDE's Water Supply Program indicates the type of orthophosphate used by WSSC, phosphoric acid, is approved at up to 27 mg/l. WSSC will use 1 mg/l.

In reviewing several guidance and regulatory documents MDE provided me, I find orthophosphate is recommended as an additive to prevent health problems caused by lead and copper leaching into the water supply, thereby making a significant contribution to protecting the public's health. Both lead and copper are considered a threat to the public health, especially children. Orthophosphate is not considered of any concern in the literature provided by MDE. EPA recommends orthophosphate be maintained at .5- 1.0 mg/l.

It is true orthophosphate must be reduced before treated water is returned to surface waters. However, this is because it is a nutrient and can produce problems with algae and other aquatic overgrowth in rivers and streams and lakes, not from any concern of negative health effects from human consumption.

Finally, I independently researched the following websites which provided statements confirming the above information:

1. Joint FAO/WHO Expert Committee on Food Additives. Their evaluation of maximum acceptable daily intake: 70mg/kg of phosphates. (5,250mg for a 165 lbs. man)
2. National Academies of Press, Identifying Future Drinking Water Contaminants (1999). My word search of the book revealed no "hits" on ORTHOPHOSPHATES.
3. US EPA Ground Water & Drinking Water Website: Drinking Water Contaminants. Inorganic contaminants list did NOT include orthophosphate.
4. US EPA Revised Guidance Manual for Selecting Lead and Copper Control Strategies. States: "The key to ensuring that orthophosphate will reduce lead and copper levels is to . . . maintain a residual of at least 0.5 mg/l as phosphate and, if possible, a residual of 1 mg/l a P is preferable."
5. Contaminant Occurrences in drinking Water Treatment Chemicals. A summary Report of NSF International Results (1991-1999). ANSI/NSF 60: *Drinking Water Treatment chemicals – Health Effects*. My review revealed

no orthophosphate compound involved in any non compliance result over the 9 year period.

6. Natural Resources Defense Council. Clean Water & Oceans: Drinking Water: in Depth Report. (Also titled What's on Tap? Grading Drinking Waters in U.S. Cities.) This report makes no mention of orthophosphates in its listing and discussion of drinking water contaminants.
7. Center for Science in the Public Interest. Guide to Food Additives. This guide lists phosphoric acid and phosphates as "*SAFE. The additive appears to be safe.*"

I hope this information is useful in responding to any inquiries received by your office on this topic.

RMH:rmh

cc: Chuck Brown, Manager,
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