

National Aeronautics and
Space Administration
Ames Research Center
Moffett Field, CA 94035-1000

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MOFFETT FIELD
SSIC NO. 5090.3



Reply to Attn of

DQH:218-1

November 14, 1996

Ms. Elizabeth Adams
Hazardous Waste Management Division
US Environmental Protection Agency, Region IX
75 Hawthorne Street, H-6-5
San Francisco, CA 94105

Dear Ms. Adams:

As you know, NASA Ames has been negotiating a Settlement Agreement with the MEW Companies to resolve NASA Ames' liability as a PRP to the MEW plume. Specifically, NASA Ames has agreed to take responsibility for the remediation of MEW chemicals of concern (chlorinated solvents) in AOIs 9 and 7. Under the proposed Settlement Agreement, NASA Ames would pay the MEW Companies a specified sum, for which the MEW Companies would then assume this cleanup responsibility.

On October 14, I received a letter from ERM-West, Inc. (copy enclosed) regarding EPA's new draft Cancer Risk Guidelines that were released in April, 1996 (61FR17960-18011). According to ERM-West, substantially higher cleanup levels may be established for some carcinogens under the new guidelines. Apparently, ERM-West was able to calculate a safe level of 400 parts per billion for trichloroethylene (TCE) in water, compared to the existing MCL of 5 parts per billion. NASA-Ames will also task our contractor, Uribe & Associates, to independently calculate a new safe level.

Based on NASA Ames' Third Quarter 1996 (July 25, 1996) groundwater sampling data, the TCE concentration in the groundwater in AOIs 9 and 7 ranges from 0.65 parts per billion to 110 parts per billion (see attached figure). Obviously, these levels are well below ERM-West's calculated safe level of 400 parts per billion.

Therefore, NASA-Ames is seeking official guidance from the EPA. Shall we expend federal funds to begin a cleanup that may not be warranted, based on EPA's revised Cancer Risk Guidelines? NASA-Ames will await your written response before signing the proposed Settlement Agreement with the MEW Companies.

If you have any questions, I can be reached at 415-604-3355.

Sincerely,



Sandra Olliges
Acting Chief
Office of Occupational Safety, Health and Environmental Services

Enclosures

cc: Mike Gill, EPA
Joseph Chou, DTSC
Derek Whitworth, DTSC
Michael Rochette, RWQCB
✓ Stephen Chao, EFA West
Don Chuck, EFA West, Moffett Field
Michael Young, PRC
Ingrid Chen, Raytheon
Tom Jones, Schlumberger
Dennis Curran, Smith Environmental
Peter Strauss, MHB

ERM-West, Inc.

1777 Botelho Drive
Suite 260
Walnut Creek, CA 94596
(510) 946-0455
(510) 946-9968 (Fax)

October 14, 1996

Ms. Sandy Olliges
AMES Research Center
MS 218-1
Moffett Field, CA 94035

SUBJECT: USEPA's New Cancer Risk Guidelines

Dear Ms. Olliges:

You may be aware that the U.S. Environmental Protection Agency (USEPA) published new Cancer Risk Guidelines for evaluating potential risks from carcinogenic chemicals. By providing a basis for higher cleanup levels, these new guidelines may limit the need for remediation of hazardous waste sites where chemical carcinogens are present.



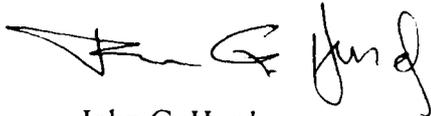
In this regard, I thought you might be interested in this "breakthrough," so I'm passing along a brief fact sheet describing the significance of USEPA's new Cancer Risk Guidelines and their potential impact on site cleanups. In essence, these revised guidelines now permit, and more importantly encourage, more accurate evaluation of potential carcinogens based on a constituent's specific mechanism of action. It has long been recognized that chemicals may cause cancer in different ways: some act as initiators by inducing changes in an organism's genetic code; others act as promoters by stimulating cell replication. These differences are now considered in establishing safe levels for exposure.

Under the new guidelines, substantially higher cleanup levels may be established for some carcinogens. For example, a safe level of 400 parts per billion may be established for trichloroethylene (TCE) in water, as compared to a level of 5 parts per billion established under the previous approach. As a result, the regulated community has the potential to reap significant benefits associated with higher cleanup levels, including more cost-effective, timely, and focused cleanups, as well as reduced liability at hazardous waste sites.

If you have questions regarding whether USEPA's new Cancer Risk Guidelines are relevant to your remediation programs, or if you would like more information on this issue, please call me at (510) 946-0455.

Sincerely,

ERM-WEST, INC.


John G. Hurd
Principal

JGH/mk/14.22/202

The Environmental Impact of USEPA's New Cancer Risk Guidelines

by Bruce Molholt, Ph.D., Director of Risk Assessment and Toxicology

BACKGROUND

In April 1996, USEPA released draft revisions to its Cancer Risk Guidelines (61FR17960-18011). This is the first time in a decade these guidelines have been revised, and the impact is expected to be staggering. Since 1986, much has been learned about how chemicals induce cancer. Of primary importance is the recognition that different carcinogens cause cancer in two major ways.

Some carcinogens cause changes in a cell's genetic material, either by inducing changes in the DNA or by rearranging the chromosomes. Such constituents (known as genotoxic carcinogens or initiators) may initiate carcinogenesis if these changes occur at critical locations within the genetic material. On the other hand, nongenotoxic carcinogens do not affect either the DNA or the chromosomes. Instead, these constituents promote carcinogenesis by stimulating the replication of certain cells that have undergone initiation by a genotoxic carcinogen. These nongenotoxic carcinogens are known as promoters.

The former USEPA cancer guidelines were generally adequate for the assessment of risk resulting from exposure to genotoxic initiators. However, they vastly overestimate risk from exposure to nongenotoxic promoters. Since most chemicals that are regulated as potential carcinogens are nongenotoxic (e.g., trichloroethylene or TCE), most risk-based cleanup standards have been set orders of magnitude below the level necessary to protect human health.

FORMER USEPA GUIDELINES

Under the former USEPA guidelines, the profound differences in how chemicals cause cancer were not appreciated by the scientific community, let alone the regulatory community. Hence, the potency of all potential carcinogens was characterized using the same, very conservative approach, in which it was assumed that cancer risk is uniformly proportional to dose. Thus, any exposure to a carcinogen, no matter how small, had the potential to cause cancer.

The dose relationships needed to estimate carcinogenic potency were defined on the basis of studies with laboratory rodents that were fed large amounts of the studied chemical. These high doses, which typically caused between 10 and 100 percent of the test animals to develop cancer, were then used to estimate doses which would result in a probability of 0.0001-0.01 percent (10^{-6} to 10^{-4}) that there would be a development of cancer in humans. Safe levels in environmental media, such as the 5 ppb maximum contaminant level (MCL) for TCE, were established on the basis of a potential 10^{-6} (i.e., one in one million) lifetime cancer risk.

POTENTIAL BENEFITS

What are the potential benefits of safe levels calculated under the new cancer risk guidelines?

The primary benefit will be higher cleanup levels, which in turn will result in:

- More Cost-Effective Cleanups
- More Timely Cleanups
- More Focused Cleanups
- Reduced Liability at Hazardous Waste Sites

For More Information Contact

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(510) 946-0455
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(800) 662-1124



CONTINUED ON BACK

- New USEPA Guidelines
- Impact on Setting Cleanup Levels
- What's Next?