

## Unknown

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**From:** Zoe Kelman  
**To:** Zellner, Adam; Jackson, Lisa  
**Subject:** Re: NTP chromium study is out.

Lisa,

As you correctly pointed out, Cr+6 was administered via drinking water in the NTP study. Nevertheless, the study is still relevant for soils. The study's slope factor can be used (with adjustments per EPA's guidance docs) to determine the cancer risk posed by absorption and/or incidental ingestion of soil contaminated with Cr+6.

The authors described the results of their study as **clear evidence of carcinogenic activity**. I want to emphasize, categorically this is the most decisive position NTP ever takes. The strength of the evidence essentially ends the debate on whether or not Cr+6 is a carcinogen by ingestion. Critics will find it very difficult to dispute these findings.

The study should have immediate impact on our Cr+6 standards (soil and water). By using the adjusted slope factor and more appropriate dosage for adsorption and soil ingestion, the new Cr standards will be much easier to defend. FYI, background concentrations of Total Cr is approx. 20 ppm, background concentrations for Cr+6 is zero.

This study also raises concerns about our alternative remedial standard (ARS) procedures. Given that there is much less variability in EPA's guidance for modelling ingestion compared to the air dispersion model which we currently use, ARSs will be closer to the standard. For example, Soil Clean-up Criterion using the current ARS Inhalation Pathway produced cleanup levels from 20 ppm for site 48 to 7,420 ppm for site 56.

Zoe

>>> Lisa Jackson 4/16/2007 1:23 PM >>>  
Zoe,

I didn't realize the study was of drinking water ingestion. I have forwarded the info to staff for review and comment as well. Lisa

>>> Zoe Kelman 4/15/2007 11:51:20 AM >>>  
Lisa,

The two year NTP study on the ingestion of hexavalent chromium in drinking water was published as a DRAFT document subject to public comment and peer review. This report supports much of what Dr. Costa has been saying for years and calls for a more protective cleanup standards.

I have attached the NTP abstract of the draft report, however the entire report must be downloaded from the following address:

<http://ntp.niehs.nih.gov/index.cfm?objectid=93F86CF4-F1F6-975E-799E4CD8D5A90F6A>

Or if the link doesn't work more information can be found by going to the NTP homepage and clicking on: current areas of research, hexavalent chromium, BSC TRRS Meeting May 2007, and then draft reports.

There will be a open public meeting of the committee for chromium and other chemicals being studied on :

May 16-17, 2007  
8:30 a.m. - 5:00 p.m.  
National Institute of Environmental Health Sciences  
Rodbell Auditorium, Rall Building  
111 TW Alexander Dr.  
Research Triangle Park, NC

Chromium is currently scheduled first on the list at 8:30 am on May 16.

If you have any problems just contact me.  
Zoe

>>> Lisa Jackson 4/15/2007 9:38 AM >>>  
Zoe,

I went to the NIEHS/NIH website and couldn't find the study results. Do you have a weblink?

>>> Zoe Kelman 04/13/07 4:40 PM >>>

The long awaited findings of the National Toxicology Program (NTP) cancer study on the ingestion of hexavalent chromium has been completed. The study's authors stated that there was clear evidence of carcinogenic activity of ingested hexavalent chromium. Furthermore the study showed toxic effects in every organ throughout the body. Tissue distribution studies showed that chromium concentrations increased with increasing exposure concentration and duration of exposure.

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**From:** Lisa Jackson  
**To:** Murphy, Eileen; Herb, Jeanne  
**Subject:** Fwd: Re: NTP chromium study is out.

**Attachments:** NTP\_ TR-546 - Abstract.pdf



NTP\_ TR-546 -  
Abstract.pdf (21...

Please advise. Thanks. Lisa

>>> Zoe Kelman 4/16/2007 11:51:20 AM >>>

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What I find most disturbing was that the scientific literature had already contained most of this information. The studies conducted by Dr. Max Costa, who is referenced throughout the report, had made the the same conclusions more than a decade ago - although refuted by industry. Based on NTPs study, Dr. Costa was correct when he described NJDEP in the Toxicology Journal as a state regulatory agency that has minimized the hazards of chromate by ingestion. NJDEP chose to completely ignore Costa's studies to the detriment of the public. The decades of delay and equivocation have unnecessarily increased the body burden of toxic chromium in Hudson County residents.

## Unknown

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**From:** Lisa P. Jackson  
**To:** Murphy, Eileen; Herb, Jeanne  
**Cc:** Adam; Zellner  
**Subject:** Chrome

I've been thinking even more about the chrome issue. I'd like a briefing from Eileen and appropriate staff before you put anything in writing or get anything in writing from the risk assessment group.

There are too many things going on that I don't feel on top of.

## Unknown

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**From:** Eileen Murphy  
**To:** Kropp, Irene; Jackson, Lisa; Herb, Jeanne  
**Subject:** Fwd: Draft Chromium report from NTP is available

Now that the peer review was done (yesterday morning), and the panel of experts agree with NTP conclusions, there will be some news reports.

I sent an update yesterday. We are using the NTP data to re-assess NJ's clean up levels for chromium. Then we'll reconvene the risk assessment subgroup to discuss. We are in close contact with the California scientists who are also re-assessing chromium numbers in light of the peer review. We expect the process to take about a month.

One minor point that may or may not come up - California's emphasis here is on drinking water. NJ's drinking water MCL for chromium is 100 ppb (same as federal government). The NTP data would certainly change this. Chromium is on the list of contaminants for the Drinking Water Quality Institute to review (I requested the review two years ago). Once California releases an updated drinking water level, the question will be will NJ also update our drinking water number - answer is: yes, our DWQI is charged with reviewing the new information for chromium in drinking water.

Eileen A. Murphy, Ph.D.  
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Div. Science, Research & Technology  
NJ Dept. of Environmental Protection  
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>>> Mary Kearns-Kaplan 5/17/2007 8:47 AM >>>

Hi all. the draft report mentioned in the press release below is online at [http://ntp.niehs.nih.gov/files/546\\_board\\_web.pdf](http://ntp.niehs.nih.gov/files/546_board_web.pdf)

[Press Release from the National Institutes of Health, May 16, 2007](#)

### **Hexavalent Chromium in Drinking Water Causes Cancer in Lab Animals.**

The news story is online at <http://www.nih.gov/news/pr/may2007/niehs-16.htm>

Excerpt: "Hexavalent Chromium in Drinking Water Causes Cancer in Lab Animals Researchers announced today that there is strong evidence a chemical referred to as hexavalent chromium, or chromium 6, causes cancer in laboratory animals when it is consumed in drinking water. The two-year study conducted by the National Toxicology Program (NTP) shows that animals given hexavalent chromium developed malignant tumors....."

The study findings were announced at the National Institute of Environmental Health Sciences (NIEHS) after the NTP Board of Scientific Counselors Technical Reports Review Subcommittee completed its independent peer review of the sodium dichromate dihydrate research report. Sodium dichromate dihydrate is an inorganic compound containing hexavalent chromium that was used in the NTP studies. The NTP is located at the NIEHS, part of the National Institutes of Health.

## Unknown

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**From:** Eileen Murphy  
**To:** Makatura, Elaine; Jackson, Lisa P.; Herb, Jeanne  
**Cc:** Irene; Kropp  
**Subject:** RE: Important heads up re: chromium NTP study

We will have that number soon.

The current soil ingestion number for hexavalent chromium in residential areas is 240 ppm (it is 6100 ppm for nonresidential). The NTP study will result in a more stringent soil clean up number - current estimates are that it would be somewhere between **2 and 20 ppm** (not sure yet, but I know you probably would like a general idea).

The inhalation number would not change from the current nonresidential of 20 ppm and residential of 270 ppm.

Eileen A. Murphy, Ph.D.  
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>>> "Lisa P. Jackson" <[commdep@dep.state.nj.us](mailto:commdep@dep.state.nj.us)> 5/17/2007 1:12 PM >>>

The imp't question is what does the NTP number mean for soils? What would 220 ppm be in light of these results? Please advise. Lisa

-----Original Message-----

From: "Jeanne Herb" <[Jeanne.Herb@dep.state.nj.us](mailto:Jeanne.Herb@dep.state.nj.us)>  
To: "Elaine Makatura" <[Elaine.Makatura@dep.state.nj.us](mailto:Elaine.Makatura@dep.state.nj.us)>; "Commdep@dep.state.nj.us" <[Commdep@dep.state.nj.us](mailto:Commdep@dep.state.nj.us)>  
Cc: "Eileen Murphy" <[Eileen.Murphy@dep.state.nj.us](mailto:Eileen.Murphy@dep.state.nj.us)>; "Irene Kropp" <[Irene.Kropp@dep.state.nj.us](mailto:Irene.Kropp@dep.state.nj.us)>  
Sent: 5/17/07 10:10 AM  
Subject: Important heads up re: chromium NTP study

\*\* High Priority \*\*

May get press calls...

>>> Eileen Murphy 5/17/2007 9:07 AM >>>

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**From:** Eileen Murphy  
**To:** Kropp, Irene; Jackson, Lisa; Herb, Jeanne  
**Cc:** Stern, Alan; Frasco, Barry  
**Subject:** Chromium NTP study

I asked Alan Stern to describe the significance of the recent posting of the NTP report. Below is his response, which I am sending to you so that you are aware of two important points:

- the report has not been peer reviewed. The peer review is scheduled for May 16, and we will be observing it via webcast. If, after the peer review, it is determined that the data are valid and interpretations are sound, the group will use it to re-assess the clean up numbers.
- the terminology used by NTP is not the same as that used by IRIS, regarding carcinogenicity. The staff scientists on the risk subgroup are familiar with the terminologies and will address and interpret the findings accordingly.

On 3/20/07, the National Toxicology Program (NTP) posted the preliminary results for peer-review of the chronic (105 week) toxicology bioassay for sodium dichromate dihydrate on its website:

<http://ntp.niehs.nih.gov/index.cfm?objectid=5FE88732-F1F6-975E-70FA764DD21980C2>.

On 4/17/07, the NTP posted its Draft Technical Report for Peer Review on its website at:

[http://ntp.niehs.nih.gov/files/546\\_board\\_web.pdf](http://ntp.niehs.nih.gov/files/546_board_web.pdf).

The draft abstract for this report along with brief tables of summary results is also posted on 4/12/07 at:

<http://ntp.niehs.nih.gov/index.cfm?objectid=E1C04561-F1F6-975E-7B21E8B231BAB44F>.

These results include pathology data on neoplastic (tumors) and non-neoplastic lesions for both mice and rats. We have been aware of these results and have reviewed them for the purpose of obtaining a qualitative picture of their potential overall significance. However, it is critical to note that these results are preliminary and have not undergone peer-review. It is not likely that the raw data themselves, will change as a result of peer review. However, the interpretation of the results as presented in the draft report with respect to their toxicological significance and relevance to humans is subject to change as a result of the peer review.

In summary, there were no overt clinical effects observed in either rats or mice at any dose. The results, however, show evidence of carcinogenicity by ingestion (i.e., through drinking water) in both rats and mice although the location of the tumors is different in mice (small intestine) and rats (oral cavity). The draft NTP study concludes that there is "clear evidence of carcinogenic activity" in male and female rats and mice. This is an NTP-specific classification and should not be confused with the EPA's categories for classification of carcinogenic potential in humans as employed in its IRIS database. In addition, non-neoplastic (non-cancer) effects were also seen, most notably hyperplasia of the small intestine in mice, likely to be pre-neoplastic relative to the observed tumors, and infiltration of histocytes (white blood cells) in various tissues of rats and mice. The biological significance of this infiltration is not known.

It seems reasonable to assume that these findings, if sustained in the peer-review, would warrant a re-assessment of our current risk-based standards for oral Cr+6 exposure. However, given the possibility for re-interpretation of the findings as a result of the peer-review, it is not appropriate for us to proceed to a change of the carcinogenicity classification or a quantitative risk assessment of these results at the present time. The NTP peer-review meeting is scheduled for May 16-17, and we plan to view it via webcast. NTP has told us in telephone conversation today that the draft reported is anticipated to be finalized about 3-6 months after the peer-review meeting. We will continue to follow these developments closely, and we will provide guidance for consideration of changes in the risk-based standards and guidelines after review of the final peer-reviewed report.

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