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Docket H054A
Ex. 40-12-1

January 3, 2004

OSHA
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DATE JAN 3 2005
TIME

Docket Office, Docket H054A
Room N-2625
Occupational Safety and Health Administration
United States Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Re: Hearing Testimony on the Proposed Rule on Occupational Exposure to Hexavalent Chromium (CrVI), 69 Fed. Reg. 59305 (October 4, 2004); Docket No. H054A

Dear Sir or Madam:

On behalf of the Chrome Coalition, we provide these outlines of Dr. Joel Barnhart's testimony on the proposed rule on Occupational Exposure to Hexavalent Chromium ("CrVI"), 69 Fed. Reg. 59305 (October 4, 2004); Docket No. H054A, for the informal public hearing to be held in Washington, D.C. scheduled to begin on February 1, 2005. The contents of his testimony are provided in Attachments A and B. Dr. Barnhart reserves the right to revise or supplement these remarks, in particular based on his review of materials submitted to the docket in this rulemaking. Please feel free to contact me with any questions.

Sincerely,

Kathryn M. McMahon-Lohrer

Attachment

ATTACHMENT A

I. THE SCIENTIFIC STUDIES UPON WHICH OSHA RELIES DO NOT JUSTIFY A PEL AS LOW AS CONTEMPLATED

OSHA's basis for revising the PEL for Cr(VI) and establishing a comprehensive standard is based in large part on the reports of elevated risk of lung cancer for workers exposed to Cr(VI), especially those exposed during the period of 1930-1970 in the chromate chemicals production industry. Several studies of this industry demonstrated a significantly elevated risk of lung cancer especially for those workers with the highest exposures. These studies, however, are not adequate to develop numerical risk assessments for exposure to Cr(VI) in all industries for the following reasons:

A. OSHA should not assume that the exposure values from historical chromate chemical production are typical of exposures found in other industries

- It is very unlikely that the types of exposures and the compounds to which workers were exposed in the chromate production industry in the 1930s through the 1970s are representative of the current exposures to Cr(VI) in either this or other industries.
- The numerical risk calculations discussed by OSHA are based on data from one small industry (currently fewer than 200 total employees in the United States), with much higher exposure levels than occur in industry today and using processes no longer used. These processes generated large amounts of a very fine, alkaline dust some of which probably contained very reactive chromium in oxidation states intermediate between 3 and 6.

B. The possibility of a threshold-like effect in the relationship between exposure to Cr(VI) and lung cancer suggests that the studies on chromate production workers should not be relied on to establish the PEL

- The additional risk of lung cancer due to exposure to low levels of Cr (VI) might be lower, perhaps significantly lower, than would be predicted by assuming that the risk at these exposure levels is linearly related to the risk at the high exposure levels that were studied.
- In both the Baltimore and Painsville studies, the low exposure groups do not show a significantly increased risk compared to a relevant control group.
- Use of a linear risk model can lead to a serious overprediction estimated risk.

C. Several factors associated with the exposure data generation have led to an underestimation of the cumulative lifetime exposures, and therefore, an overestimation of risk.

- All of the samples in the Painesville study and most of the samples in the Baltimore study were area samples. Since there were a number of manual operations in these plants it is reasonable to expect that the workers would have been closer to the materials being processed than the area samples. Consequently the workers are likely to have had higher exposures than those measured.
- In both the Baltimore and Painsville studies the sampling plans were set up to measure typical exposures under normal working conditions (*Proctor et al.* 2003, *Gibb et al.* 2000). It is likely that instances of very high exposure, such as when equipment malfunctioned, were not included. In situations like this, the average exposure – which is the appropriate value for calculating cumulative lifetime exposure – might be much higher than the "normal" exposure.
- In the Baltimore study other factors may have contributed to artificially lower exposure values being reported, such as most of the samples from the 1960s were taken with the RAC sampler (*Hayes*, 1979). It is very likely that a significant portion of the Cr(VI) sampled was chemically reduced on the cotton sample strip, and consequently, the exposures were appreciably higher than reported.
- The exposure values identified in both the Painsville and Baltimore studies are consistently lower than those reported for a similar time period by alternative sources (*Braver et al.* 1985; *PHS* 1953).

D. Sampling Method for Cr(VI)

- We believe that most of the reported exposure levels were based on results using OSHA Method ID-215 or a variation on it. Based on this, we are concerned about how this information is used. Although this method details the validation of the analytical aspects of the method, very little is said about how representative the sampling method is of the actual worker exposure.
- The sampling technique used can have a significant effect on the sampling results especially when there is a range of airborne particle sizes involved or where significant air movement may be found when measuring exposures outside or when LEV is in operation.
- We have not seen documentation on exactly how the sampling was performed during the site visits but we do not believe that OSHA or its contractors consistently used a sampler that addressed these problems.
- We believe that the information gathered during the site visits could have misled OSHA as to the technical feasibility of achieving a 1 $\mu g/m^3$ PEL at many of these sites.

- Additionally, OSHA must specify in detail the method they will be using to determine compliance even if it is not mandated for routine sampling.

II. CONCLUSIONS

A. ***OSHA's numeric risk values are overly conservative and unnecessary to protect workers' health in light of the change in processes and operations since the Baltimore and Painsville chromate production operations were studied.***

B. ***OSHA is strongly encouraged to collect additional data and reassess its analysis of risk, cost and technical feasibility before proceeding any further with this rulemaking.***

ATTACHMENT B

I. OSHA'S EXPOSURE ASSUMPTIONS ARE FLAWED

A. OSHA Has Underestimated the Exposed Population

1. General Observations of OSHA's Assessment of the Exposed Population

- OSHA's exposure profile is fundamentally flawed because it severely underestimates the number of exposed workers for various industries.
- For the industries we have reviewed, OSHA's exposure profile recognizes only a fraction of the potentially exposed workforce. This is a significant shortcoming in OSHA's analysis because it prevented the agency from gaining an accurate understanding or appreciation for the cost and burden this rule imposes on industry.
- Obviously, the greater the number of workers exposed to even low concentrations of Cr(VI), the more time it will take employers to assess the workforce to more precisely define the concentrations to which various types of workers are exposed, the more production time it will take to train exposed employees, and the greater the costs it will impose on industry.
- We strongly recommend that OSHA obtain better data – both better estimates of the number of exposed workers in the industry as well as a better assessment of the concentrations to which the affected workforce is exposed – before promulgating a final rule.

2. Specific Industry Examples Where OSHA Underestimates the Exposed Population

- In general:
  - For each affected industry, OSHA determines which job categories in that industry will experience exposure. In this process, however, OSHA fails to account for those workers that might be working in the vicinity of those particular job categories.
- For example in the steel industry:
  - OSHA fails to consider as part of the universe of potentially affected facilities mills that do not manufacture stainless or chromium alloy steels, but nonetheless roll (i.e., larger rolling mills and small shops) or otherwise process (cut, grind, weld and otherwise shape and work with) stainless and other alloy steels to produce intermediate or end-use products.
  - OSHA fails to consider the effect of the rule on carbon steel manufacturing facilities. Some carbon steel facilities utilize chromium in the manufacturing process.
  - OSHA fails to account for thousands of workers employed by customers of steel mills (both specialty and carbon steel) or superalloy producers that perform grinding, welding, and other operations that may generate Cr(VI).

- Thus, OSHA must conduct a more robust assessment of the affected industries in order for the compliance cost estimate and, hence, economic and technological feasibility analyses to have any meaning.

B. The Exposure Database is Unrepresentative of the Exposure Actually Experienced in the Industries

- OSHA's estimate of industry workers exposures is based on data points that were obtained through site visits, published literature or interested parties. However, most of the data obtained is very limited. OSHA even admits this fact for certain industries. (OSHA acknowledges that the steel industry data from only two site visits was extremely limited. *See* Ex. 35-391 at ES-13.)
- Because the proposed PEL is so much lower than the present standard, we do not believe that OSHA's database is sufficient to accurately determine the feasibility of achieving the propose PEL. The data is neither representative nor adequate as a basis for characterizing worker exposure based on job categories. For some of the sampling data, there is no way to determine if the samples represent typical exposures. Thus, these data are wholly inappropriate for assessing industry-wide impacts.

II. CRITIQUE OF OSHA'S ECONOMIC FEASIBILITY

A. Fundamental Flaws with the Costs of Compliance Analysis

- The method of estimating costs to meet the proposed standard is flawed in many respects. Some of these flaws are errors in logic, some are simply poor estimates because they do not represent real-world situations or experience, and some are symptomatic of the subjectivity of the requirements to comply with the standard.

1. Use of Percentage Distribution of Exposures by Job Categories as the Basis for Estimating the Number of Facilities Requiring Controls or Work Practices is Flawed.

- A fundamental error in OSHA's feasibility analysis is the use of the job category exposure distributions to estimate the number of facilities that will be required to install engineering controls.
- Because engineering controls are a significant component of compliance costs, this aspect of the methodology is critical. Yet in the absence of information on the number of facilities where operations resulting in Cr(VI) exposures occur, OSHA simply assumed that the percentage of facilities needing engineering controls for a certain job category *(i.e.*, spray painting) equals the percentage of employees in OSHA's exposure profile who experience exposures above the PEL. The percentage of *establishments* that must install controls is not related to the percentage of *employees* above a given exposure level (even assuming the exposure level assumptions are accurate).

- If a given plant has even a single employee in a job category exposed to levels in excess of the PEL, the facility would be compelled to install engineering controls to address that exposure, regardless of the percentage of employees in that job category exposed on an industry-wide basis. The impact of the reliance on percentage of exposed employees to determine the percentage of facilities that will need engineering controls is to potentially significantly suppress the number of facilities where controls will be necessary to consistently achieve the 1 $\mu g/m^3$.
- Most companies will engineer to meet the action level or even lower – thus costs for meeting the PEL is not the true cost to industry.

2. Use of Median Exposure Values

- Another fundamental flaw in OSHA's economic analysis is the apparent reliance on median exposure values to calculate compliance costs.
- OSHA's compliance cost calculations are based on assumptions regarding the type and number of engineering controls that will need to be installed in the industry to achieve the proposed PEL. Rather than relying on the raw exposure data that OSHA had available to it for each job category of affected employees, OSHA calculated a median exposure value for each affected job category.
- The agency first determined the controls that would be capable of achieving a PEL of less than 1 $\mu g/m^3$ for each job category. Then, using the median exposure value as fully representative of the exposure parameters for each job category, OSHA determined whether engineering controls would need to be installed to achieve an exposure of less than 1$\mu g/m^3$ for that job category.
    - For instance, OSHA identified 11 categories of welders or welding processes that potentially result in Cr(VI) exposures. While data for each of these 11 job categories showed exposures above 1 $\mu g/m^3$, OSHA assumed only those job categories where the *median exposure* value was 1 $\mu g/m^3$ or greater would need engineering controls to be installed to achieve the PEL. OSHA therefore included in its compliance cost calculations only a small percentage of the number of engineering controls that actually will need to be installed industry-wide to achieve a 1$\mu g/m^3$.
- Without doubt, employers will not be allowed to install engineering controls only where the median exposures for a certain job are above 1$\mu g/m^3$. Rather, anytime an employer has a reasonable basis (monitoring; historic data; professional judgment, etc.) to believe that *any* exposures, not just calculated median exposures, will reach 1 $\mu g/m^3$, that employer must install engineering controls to meet the proposed PEL.
- OSHA cannot use a method for predicting costs that differ from methods used to measure compliance.

3. **Reliance on OSHA's Estimate of Exposed Workers**

   - A critical basis for OSHA's cost analysis is the agency's estimate of the number of exposed workers. If this estimate is incorrect, the remainder of the analysis becomes flawed.
   - OSHA has significantly underestimated the number of exposed workers, and therefore, because the costs of compliance are derived from these exposure estimates, the costs of compliance are underestimated as well.

4. **Inaccuracy of Unit Cost Assumptions**

   - The agency has simply failed to obtain accurate unit cost information for many of the direct unit costs (both equipment costs and labor costs) that the agency recognizes will be incurred to comply with the PEL, or failed altogether to identify an essential unit cost associated with compliance with the rule. These underestimates of equipment and labor costs directly impact OSHA's entire feasibility analysis because they are the building blocks upon which the agency relies to calculate industry costs.
   - The single largest cost that OSHA failed to include was the lost productivity. The agency recognizes that the LEV equipment will need to be constantly adjusted, yet does not include any lost productivity or lost labor time associated with such readjustment.
   - OSHA completely failed to include labor costs associated with setting up and then removing the LEV equipment, including the in-take hose.

5. **For the General Industry Standard, the Action Level is the More Appropriate Basis for Cost Estimates than the PEL**

   - A prudent facility will design necessary engineering controls to achieve Cr(VI) levels well below the proposed PEL.
   - In the workplace safety context, "over-engineering" to achieve compliance is common to reduce workplace concerns and the stigma of operating at or near the PEL.

B. Critique of Industry Revenue/Profits Data

- Since 2001, the manufacturing sector has experienced a record, and likely historic, downturn that should have been, but, by and large, was not, factored into OSHA's revenues/profits analysis.

III. ADDITIONAL COMMENTS AND RECOMMENDATIONS ON SELECT PROVISIONS OF THE RULE

The proposal could be revised in various ways to provide significant relief from the rule without sacrificing health of workers.

A. A Variance Provision is Needed Where Respirators are Already Required for Other Reasons

- OSHA should allow compliance to be achieved through the use of respirators (or other PPE) where respirators are already mandated to achieve compliance with another OSHA standard.
- Such a provision would provide significant relief to affected industries and, most importantly, *not* sacrifice any measure of additional protection.
- If an employee is required to wear a respirator to protect against exposures to lead, nickel, cadmium, or other regulated chemicals, implementation of engineering controls to achieve compliance with the Cr(VI) PEL imposes significant burden and expense on the employer with *no attendant benefit to the employee.*
- The proposed rule currently does not recognize existing respiratory protection that is in use, and requires industry to implement engineering controls to reduce *theoretical* rather than actual exposures.
- Such a provision would not conflict with OSHA precedent for requiring the adoption of feasible engineering controls before resorting to respirators. Under these circumstances, an employer already would have adopted appropriate engineering controls to address other workplace exposures. In many cases, these controls would be the same as those that may be used to address Cr(VI) (*i.e.*, LEV or increased ventilation). Accordingly, allowing employers to comply with the proposed standard through the use of existing respiratory controls would not lead to a significant reduction in engineering controls.
- Moreover, the incremental benefit of upgrading engineering controls adopted to comply with the lead, cadmium, or other OSHA standard does not justify the added expense when respirators nevertheless will be required.
- Protecting against a purely theoretical rather than a real risk is not worth the admittedly enormous cost to the industries that will be impacted by this standard.

B. Restrictions on Job Rotation as a Means of Limiting Exposure are Inconsistent with Other Permitted Practices.

- Section 1910.1026(d)(2) of the proposed rule prohibits employers from rotating employees to different jobs to achieve compliance with the PEL. 69 Fed. Reg. at 59469.
- Restrictions on job rotation as a means of limiting exposure are inconsistent with the intent of the rule and is inconsistent with other provisions of the rule that allow employees to be isolated during their work shifts to maintain exposures below the PEL. OSHA's prohibition against job rotation is an unreasonable and unjustified intrusion into company management prerogatives.
- There is no practical difference between the establishment of work practices for a given job category in order to isolate the employee during portions of the work day or work week to minimize exposure and the practice of describing an employee's responsibilities for that job category in a manner that assigns the

employee to different tasks during the work day to reduce the employee's exposure.

- In both cases, the objective and purpose of the proposed OSHA Cr(VI) PEL is accomplished; the employee's 8-hour TWA exposure is maintained below the prescribed level.