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Ms. Diane Manning  
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May 30, 1996

Dear Ms. Manning:

In response to the letter of Dr. Lawrence Fine and Draft of the Metalworking Fluid Criteria Document (February 1996), I am sending this letter with my comments. I am also planning to attend the public meetings in mid-June.

- 1) Asthma and Pulmonary Sensitization (p.72-)  
Given the extensive discussion of occupational asthma throughout the Draft Criteria Document, this should also be tied to future research needs. For example, there should an attempt to identify metalworking fluids and components that may act as pulmonary sensitizers *prior to* introduction in the workplace.
- 2) NTP Studies (p.127-128)  
It is important to stress that the NTP animal studies involved dermal or ingestion exposures, not inhalation. As noted in the Draft Criteria Document and elsewhere, health professionals are concerned with possible *respiratory* effects of metalworking fluids and their components in workers. Thus if future chronic animal studies are to be conducted, then the relevant route of exposure must be inhalation.
- 3) Biocides (p.132-133)  
We did not find published data describing toxic effects of *inhalation* exposure to biocides. Yet, biocides will become airborne in the workplace when added to metalworking fluids and inhalation exposures will indeed occur. We evaluated the respiratory effects of several biocides in mice and found delayed deaths following inhalation of triazine-type biocides (Detwiler-Okabayashi and Schaper, 1996; Krystofiak and Schaper, 1996). This is a serious effect and should be mentioned in the Criteria Document. I also suggest inclusion of a statement in the Research Needs for more data on biocides, particularly involving inhalation exposures.

- 4) Expansion of Toxicology Section (p.136-138)  
I sent a notebook (to Ms. Manning) on April 26, 1996 with copies of our published abstracts and papers to assist in expanding this section.
- 5) Derivation of an Occupational Exposure Limit (p.138)  
I would prefer that the sentence be modified to say "... to derive occupational exposure limits for various metalworking fluids as well as their components." We have not suggested a *single* limit for fluids and components; there were differences in potency (as respiratory irritants) and thus a distinct occupational exposure limit was proposed for each fluid and component that we evaluated.
- 6) Current Recommendations and Standards (p.154-155)  
I would add a column in these tables specifying the basis for the recommended limit or standard. Are the values based on "housekeeping", "cancer", "irritation", etc.? These differences are important.
- 7) Safety and Health Training (p.194)  
I am in agreement that workers need to be informed about hazardous chemicals in metalworking fluids. Material Safety Data Sheets (MSDSs) *should* supply this information. There are no data on many of the components and this situation will have to change if workers are to be provided with quality MSDSs.
- 8) Research Needs (p.217-219)  
I strongly object to the statement indicating a need for "bioassays to measure respiratory irritancy of MWFs". Please remove it! A mouse bioassay *was used* successfully to evaluate the respiratory irritancy of MWFs and their components. This bioassay is also an ASTM method. While I have concerns with the proper "safety factor" for pulmonary irritants (60, 100, etc.), this is not the case with sensory irritants. We have shown that there is an excellent correlation between occupational exposure limits predicted from the mouse bioassay ( $0.03 \times RD_{50}$ ) vs. the ACGIH TLVs. This conclusion is based upon 89 chemicals. Thus, I find that it is unfair to say that a bioassay is *needed*. I agree that additional research should be done with pulmonary irritants and the "safety factor" of 60 should be re-examined.

Sincerely,



Michelle M. Schaper, Ph.D.

Associate Professor of Environmental and Occupational Health