

American Petroleum Institute
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memo

Date: September 10, 1992
From: Mary Paxton
TO: Benzene Task Force
Re: Meeting with Bill Farland

At 11:30 on Tuesday, September 1, representatives of API's BTF met at EPA with Bill Farland and other individuals involved in EPA's reevaluation of its risk assessment for benzene (attendance list follows).

Bill Farland introduced his group to us and explained what they would be doing about benzene in response to the request from Mobile Sources under the Clean Air Act. Nothing specific was said about reviews for butadiene or formaldehyde.

Bob Sonawane will be overseeing the updating of the 1985 interim risk assessment for benzene. They will determine whether health endpoints in addition to cancer should be considered when estimating health risks; a contractor is now preparing chapters summarizing the available information on an endpoint-by-endpoint basis. They are hoping to receive a complete first draft by November or December and to have a document ready for review by the SAB by the end of March 1993. Hugh McKinnon noted that when the scientific data generated since 1985 has been gathered, they will recommend what changes in the risk assessment should be considered and point out what research is in progress that might influence the result. They intend to meet their deadline by having a revision ready in the early summer of 1993.

Pat Beatty reviewed the progress that has been made in the API/WSPA(/CMA) research project on benzene since our last meeting with Farland in March 1991 (handout attached). There was some discussion of how Pausentbach's new exposure estimates for the Pliofilm cohort were derived, reasons for using the proportional hazard's model, and the variables being considered in Crump's sensitivity analysis.

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Bill Farland emphasized that API's recent efforts to have the results of their sponsored research published provided much more useful information for EPA to work with. They would be interested in having Crump present a seminar at EPA when his results are finalized. The suggestion of including other individuals who have been modeling risks for benzene (e.g., Chinaglia, Threland, Cox, etc.) at such a meeting with the EPA team was received positively. We extended invitations to our September 11-13 research workshop (agenda attached) to any additional staffers beyond Chao Chen and Jeannette Wiltse, who were already planning to attend whose participation the EPA team thought would be valuable. (Sonawane, Chiu, Rhomberg, and Valcovic were subsequently selected.) A meeting of the risk modelers will be held about two months later.

Attendees

American Petroleum Institute

Benzene Task Force

Pat Beatty	Chevron
Cosmo DiPerna	Mobil
Bob Drew	API
Mary Paxton	API

Environmental Protection Agency

Office of Research & Development

Office of Health & Environmental Assessment

Bill Farland	Director
	<u>Human Health Assessment Group</u>
Hugh McKinnon	Director
Charles Ris	Deputy Director
Jim Cogliano	Cancer Statistics & Epidemiology, Branch
	Chief
Bob Sonawane	Reproductive & Developmental Toxicity, Branch
	Chief
David Bayliss	Epidemiologist
Chao Chen	Statistician
Arthur Chiu	Pathologist
Eric Clegg	Reproductive toxicologist
Larry Valcovic	Geneticist

Meeting Objectives

- Understand EPA's current activities and schedule related to reassessment of benzene and butadiene risks
- Describe API's current benzene-related activities and summarize new information developed by API relevant to benzene risk assessment
- Determine how API can contribute to EPA's reassessment of benzene risk

SLIDE 1

API Basic Biology Research - In Progress

- Travis - pharmacokinetics of benzene
- CIIT - metabolism and kinetics of metabolites
- Irons and Ross - mechanistic studies of metabolite effects on bone marrow stem cells
- Cox - modeling of pharmacokinetics, metabolism, and pharmacodynamics leading to leukemogenesis

SLIDE 2

API Basic Biology Research - Future Direction

- Travis's pharmacokinetic work has resulted in a PK model for benzene that should be valuable
- The other research projects are long-range and unlikely to influence the benzene risk assessment in 1992
- Benzene Research Workshop on September 21-23, 1992, will develop ideas for future research efforts by API

SLIDE 3

API/WSPA Epidemiology on Pliofilm Cohort

- **Paustenbach re-evaluation of worker exposure levels**
- **ENVIRON re-analysis of the mortality data and estimation of risks of occupational exposure**
- **Crump sensitivity analysis of models and assumptions (ongoing)**

SLIDE 4

Pliofilm Cohort Exposure Reevaluation

- Paustenbach was unable to get more data from Goodyear, but interviewed 3 credible Ohio Pliofilm workers who provided important historical information
- Exposure data re-analyzed, considering many forms of indirect evidence
- Concluded that exposure levels were generally similar to those estimated by Crump and Allen (OSHA, 1984) and considerably higher than those estimated by Rinsky
- Published 1992, Journal of Toxicology and Environmental Health 36:177-231

SLIDE 5

Update of Pliofilm Cohort Mortality

- ENVIRON incorporated mortality information for 1981 through 1987
 - No evidence of "solid tumor" response
 - No additional multiple myelomas
 - Seven new cases of hematopoietic tumors, including 5 leukemias in males and 1 in a female
- Applied proportional hazards model to estimate risk
 - Proportional hazards model indicates that, in the occupational exposure range, cancer potency is approximately one tenth of EPA's 1985 estimate
- Accepted for publication in Risk Analysis, 1992

SLIDE 6

Crump Analysis of Pliofilm Data

- Use of all the cohort's cancer mortality and exposure information shows response to benzene exposure is clearly non-linear
- Fitting absolute (additive) and relative (multiplicative) risk models
- Using weighted, lagged, and cumulative exposure measures
- Estimating slopes for a variety of cancer endpoints in an effort to define tumor type(s) responding to benzene exposure (best basis for risk assessment)

SLIDE 7

What's Next

- How can API contribute to the EPA effort? ■

SLIDE 8