

MEETING
STATE OF CALIFORNIA
OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT
PROPOSITION 65
CARCINOGEN IDENTIFICATION COMMITTEE

JOE SERNA JR.
CAL/EPA HEADQUARTERS BUILDING
1001 I STREET
SIERRA HEARING ROOM
SACRAMENTO, CALIFORNIA

FRIDAY, MAY 29, 2009

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JAMES F. PETERS, CSR, RPR
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PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

APPEARANCES

COMMITTEE MEMBERS

Dr. Thomas M. Mack, Chairperson

Dr. David A. Eastmond

Dr. Solomon Hamburg

Dr. Martin L. Hopp

Dr. Joseph Landolph

Dr. Anna H. Wu

STAFF

Dr. Joan E. Denton, Director

Mr. Allan Hirsch, Chief Deputy Director

Dr. George Alexeeff, Deputy Director

Ms. Carol Monahan-Cummings, Chief Counsel

Dr. Jay Beaumont, Cancer Toxicology & Epidemiology Section

Dr. Jennifer Hsieh, Cancer Toxicology & Epidemiology
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Dr. Martha Sandy, Chief, Cancer Toxicology & Epidemiology
Section

Dr. Rajpal Tomar, Cancer Toxicology & Epidemiology Section

Dr. Lauren, Zeise, Chief, Reproductive and Cancer Hazard
Assessment Branch

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APPEARANCES CONTINUED

ALSO PRESENT

Ms. Jeanette Bajorek, FAN

Dr. Robert Barter, ExxonMobil Biomedical Sciences

Mr. David Boothe, FAN

Dr. Derek Gammon, FMC Corporation

Mr. Danny Gottlieb, Citizens for Safe Water in Modesto,
California

Mr. Jeff Green, Citizens for Safe Drinking Water

Mr. J. William Hirzy, National Treasure Employees Union,
Chapter 280

Dr. Sarah Janssen, Natural Resources Defense Council

Dr. David Kennedy, International Academy of Oral Medicine
and Toxicology

Dr. Gerald Kennedy, DuPont

Mr. Stan Landfair, DuPont

Dr. Jay Murray, Consumer Healthcare Products Association

Dr. Lisa Navarro, Ciba Corporation

Mr. Chris Neurath, American Environmental Health Studies
Project

Dr. Howard Pollick, University of California, San
Francisco

Ms. Renée Sharp, Environmental Working Group

Dr. Annette M. Shipp, ENVIRON International

Dr. Fernando Suarez, Syngenta Corporation

Dr. Gary Van Riper, International Molybdenum Association

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1 PROCEEDINGS

2 DIRECTOR DENTON: Since we have all of our
3 committee members present, I just have a few opening
4 remarks and then I'm going to turn it over to our
5 Chairman, Dr. Tom Mack, to conduct the meeting.

6 First of all, let me introduce the panel members.
7 To my left is our Chair, Dr. Tom Mack; and to his left is
8 Dr. Anna Wu; and then Dr. Joe Landolph is at the far end.

9 To my right, is Dr. David Eastmond followed by
10 Dr. Marty Hopp; and then at the end to my far right is Dr.
11 Solomon Hamburg.

12 Dr. Darryl Hunter, who is also a member of this
13 committee, was unable to attend today. So this is the
14 panel members, which will be participating in the meeting
15 today.

16 All of you know, but I'd like to repeat, that
17 this is the second time that OEHHA has had the opportunity
18 to solicit the advice of the Carcinogen Identification
19 Committee on prioritization of chemicals for development
20 of hazard identification materials. And this process
21 basically follows our 2004 prioritization document.

22 We have 38 chemicals, which we are soliciting
23 advice and recommendations from the Committee on today,
24 and those committees -- I'm sorry, and those chemicals
25 passed either the human screen or the animal screen. And

1 again, the procedure is very well outlined in our
2 prioritization document. And I'm assuming that everyone
3 here in the audience is familiar with that.

4 So I want to make a comment about the agenda.
5 The Committee will be considering batches of chemicals.
6 As they go through the 38 chemicals, there will be
7 Committee discussion, in which there will be an initial
8 relative ranking of chemicals of all the 38 chemicals.
9 And, at that point, we're going to take a break.

10 The main purpose of the break will be to give you
11 and the audience an opportunity to, having heard the
12 discussion, decide whether or not you want to provide oral
13 comments or if you've already decided and turned in a card
14 to Cindy. Cindy is the keeper of the blue cards, which
15 indicate individuals who want to provide public testimony.

16 If you decide, at that time, you've already
17 turned in a card and you decided that you don't want to
18 make comments, then you can withdraw your comment card at
19 this time.

20 But these comment cards help us kind of keep
21 organized and sort of run through the meeting smoothly.
22 So at any rate between the Committee discussion and the
23 actual official public comments at the mike here, there
24 will be a 10 minute break.

25 So with that, I would like to turn it over to our

1 esteemed Chair, Dr. Tom Mack.

2 CHAIRPERSON MACK: Thank you, Joan. Are you
3 hearing me?

4 In contrast to my usual free-wheeling style, I'm
5 trying to impose some discipline on myself this morning.
6 And one of the features of that discipline is to read you
7 a little preamble, a little position paper about our first
8 task today, which is a difficult one.

9 The prioritization of chemicals is based on a
10 number of imponderables. And one of them is the magnitude
11 of the exposure to the people of California, both past and
12 present. And the table that you have in front of you that
13 OEHHA people have provided is a very inadequate summary of
14 that, but it's the best that they or we could do.

15 Not only should the decision involve the
16 prevalence and intensity of exposure, but we have to keep
17 in mind whether or not there are particularly vulnerable
18 populations, like kids or pregnant women, and/or
19 populations, which, to some extent, are voluntarily or in
20 some other way assigned the exposure, which is
21 occupational exposures.

22 A second issue is whether or not there is enough
23 available scientific information to make a reasonable
24 judgment about whether or not a compound is, in fact, a
25 carcinogen, whether it be of animals or people. And again

1 the survey -- the table that you have provides Xs, which
2 says whether or not there is information of a given kind
3 for a given compound.

4 All of these compounds expose somebody in
5 California. And all of them have some kind of information
6 available, which means it's not a matter of whether or not
7 we actually make a judgment about listing. It's only a
8 matter of when. So this is strictly a prioritization.
9 Not a, if yes or no, it's simply a matter of which comes
10 first.

11 And there's a third issue besides the exposure
12 issue and the presence of information issue, and that is
13 the presence of authoritative body judgments. You know
14 that if an authoritative body deems a particular compound
15 to be a carcinogen, that's adopted by the listing process
16 without our having to make a separate decision.

17 Most of the chemicals on this list have been
18 addressed by authoritative bodies at one time or another.
19 And it stands, logically, that they haven't been judged to
20 be carcinogenic by those authoritative bodies at that
21 time.

22 Now, obviously some of these discussions and some
23 of these times were in the distant past. Some of them
24 were in the relative recent past. So the availability of
25 studies that might contribute to our understanding of

1 carcinogenesis may well have happened subsequent to that
2 discussion.

3 And then we come to the bear, the elephant in the
4 room. And the elephant in the room is quality of the
5 individual studies. We cannot discuss the quality of the
6 individual studies today. We cannot discuss it, because
7 if we started to do that, it would take three weeks.
8 There are 38 different compounds. There are six people up
9 here and a lot of people down there and a lot of
10 information is in the minds and the notebooks of all the
11 people up here and down there.

12 If we start discussing an individual compound, we
13 simply will start to go through the listing process and
14 that's not what we're going to do today. So I would
15 beseech you not to plan on discussing the quality of
16 studies when you come to the public comment section. I
17 want you to tell us if you know of something that we don't
18 know about the presence of a study of a certain kind that
19 isn't -- doesn't have an X in the chart in front of you,
20 or whether you have some opinion or knowledge about the
21 exposure to the people of California. Those are both very
22 pertinent. I think we probably have an accurate
23 description of all of the authoritative body judgments in
24 front of us.

25 So our discussion will not involve the quality of

1 the studies. They will only involve the existence of the
2 studies, the exposure distribution as best we know it, and
3 the timing of the authoritative bodies, and the subsequent
4 studies.

5 So when the public comment section comes up,
6 again, I'd like you to provide information if you've got
7 it available to us to help us with two things, the
8 exposure and concern about exposure to the people of
9 California on the one hand. And on the other hand,
10 whether or not there is some study that we don't know
11 about, the existence of some study we didn't know about.

12 And I think that completes my little harangue. I
13 will tell you that one of the things I've learned today
14 and that I've learned to be respectful and afraid of more
15 than I had ever in the past is very large 3-ringed
16 binders.

17 (Laughter.)

18 CHAIRPERSON MACK: I can't stand them, and we had
19 to deal with a lot of them in this process.

20 Okay.

21 DIRECTOR DENTON: Okay. Any preliminary comments
22 from OEHHA staff?

23 Thank you. I think you're good to go.

24 CHAIRPERSON MACK: All right. We'll start with
25 the chemicals that have been assigned to me.

1 And so I'll mention the exposure situation and
2 mention the authoritative body situation and the
3 availability of studies situation and then make a listing.
4 There's a question back there.

5 You can't hear me?

6 DIRECTOR DENTON: You have to speak right into
7 it.

8 CHAIRPERSON MACK: I have to speak right into it
9 like that?

10 All right. Okay, the first one on my list in the
11 order that they're present on that table is molybdenum
12 trioxide, which has relatively limited exposure in
13 California. And then generally on an occupational basis.
14 There is at least one analytic human study. There is
15 availability of studies which discuss animal data in two
16 or more categories. And there is evidence pertinent to
17 genotoxicity.

18 So I would deem that study to be relatively
19 limited in terms of exposure, but with available
20 information. And I would categorize that arbitrarily, but
21 as best I can in the middle category. Not high priority,
22 not low priority, but middle priority. Downgraded because
23 of the relatively limited exposure, upgraded because of
24 the availability of studies.

25 Now, I know that's pretty simple minded, but

1 that's the best, I think, we're going to be able to do.

2 The next one that I have on my list is rock wool.

3 Rock wool is again relatively limited in terms of
4 exposure. There is an analytic study, at least one
5 analytic study. There is studies of several animal
6 studies available and there is evidence on the issue of
7 genotoxicity and other short-term tests.

8 That compound was reviewed relatively recently by
9 IARC. And subsequent to that review, there is very little
10 additional evidence, if any. So I would designate that as
11 being low priority for this committee.

12 The next one on my list is 11-Aminoundecanoic
13 acid. That is designated as high exposure in some people.
14 There is no animal -- there is no human evidence. There
15 is animal evidence. There is evidence pertinent to
16 short-term tests. And because of the unavailability of
17 human evidence, I've designated it as being middle also.

18 The next one I have is
19 2-Chloro-1,1,1-trifluoroethane. Some occupational
20 exposure. Animal evidence is limited. There is evidence
21 on short-term tests. And I designate that as being low
22 exposure. And that's also because that's been reviewed by
23 authoritative body without any additional information
24 available.

25 Next I come to fluoride and its salts.

1 Obviously, a very, very important exposure to the people
2 of California. This time there is available human
3 evidence. There is also available animal evidence. This
4 was reviewed by authoritative bodies, but not very
5 recently. And there is at least one important study or
6 one study of humans, which has come up since the
7 availability. So I would designate that as high priority
8 for our body.

9 The next one on my list is haloperidol, which is
10 a compound that may expose some people undergoing
11 anesthesia, but at very low levels. There's no human
12 evidence. There is some animal evidence. There is
13 evidence on short-term testing. And I would designate
14 that as right on the cusp between high and middle
15 actually. So let's call it high, because it involves
16 people who are getting anesthesia. There is no
17 authoritative body information.

18 Actually, that does it. That's all six of my
19 compounds. Now, I think what we'll do is after each of us
20 finishes our list of six, we'll ask the other members of
21 the Committee if they have any comments on those six. And
22 any suggestions for changes. And then after that, we'll
23 go to the next person. So let me ask my colleagues on the
24 Committee, if there are any alternative suggestions for
25 the ones that I've listed.

1 Seeing none, we'll go to the next person. Anna,
2 would you be willing to be next?

3 COMMITTEE MEMBER WU: The first one on my list is
4 amphetamine and its salts. And it's used in many various
5 types of medications. And in terms of exposure, it is
6 high in frequent users. In terms of analytic studies,
7 there are actually at least 10 studies covering various
8 cancer sites in adults as well as in children.

9 In terms of animal studies, there is one that
10 looked at tumor initiation and promotion. And then in
11 terms of other relevant data, there are both genotoxic and
12 other mechanistic studies.

13 And based on the human analytic studies as well
14 as in terms of the exposure, I would classify this as
15 high. The second on my list is -- well, actually I'm
16 doing them alphabetically, sorry.

17 The second one is D&C Yellow #11. This is a
18 color topical in many drugs and cosmetic preparations. So
19 the exposure is widespread. There are no analytic
20 study -- or no studies in humans. There are at least two
21 or more studies in animals and there are also genotoxic
22 studies. And I would put this in the low to middle
23 category.

24 The third compound --

25 DIRECTOR DENTON: Anna, probably it would be best

1 if it was either in the low or middle, because we
2 haven't --

3 COMMITTEE MEMBER WU: Then I'll put it in low.

4 The second on my list is -- I mean, the third on
5 my list is dicofol. I don't even know how to say it.
6 Anyway, this has -- this is widespread. In terms of
7 exposure, it has two recent publications: One a
8 descriptive study in children; and one an analytic study
9 in children. There are animal studies in one site. And
10 there is a number of relevant data, both in terms of
11 mechanistic studies, hormonal activity disruption and
12 other compounds similar to this one.

13 And I would -- and this was actually reviewed by
14 IARC in 1982 and by U.S. EPA in 1998. But the two studies
15 in humans and in children that were published was in 2005.
16 And I would say that this is in the middle category.

17 I want to say middle and high, but I know you
18 said not to. But, I mean, that's really how I feel middle
19 and high, but anyway.

20 The fourth on my list is methoxychlor.

21 This one is widespread in terms of exposure.
22 There is one analytic study published in 1990 and then a
23 new descriptive study, analytic in human, that was
24 published in 2006. There's animal data in two or more
25 studies. And there are also other relevant data. And

1 this was reviewed in 1979 by IARC and by U.S. EPA in 2003.

2 And I would put this in the middle category.

3 The fourth on my list is triamterene. It is in
4 various medications. It is high exposure in those who use
5 it. There are no analytic studies. There are at least
6 two or more studies in animals and the genotoxic data, and
7 I would put this in the low category.

8 The last on my list is vinylidene chloride.
9 There are limited exposures in those who are exposed at
10 work. There is a study from 1976. And this was reviewed
11 in a summary article in humans. There are at least two or
12 more studies in animals. And there are genotoxic as well
13 as structural similarity studies that are relevant. And
14 this was reviewed in 1986 by IARC and I would put this in
15 the low category.

16 CHAIRPERSON MACK: All right. Do any of the
17 members of the Committee have any comments to make on
18 those rankings?

19 All right. Joe, would you like to go next.

20 COMMITTEE MEMBER LANDOLPH: Sure.

21 Yeah, the first one on my list is aspartame. And
22 I struggled with this one a little bit. I read a lot of
23 the public comments as well. It's an artificial sweetener
24 found in over 6,000 products, used by over 200 million
25 people worldwide. So certainly in California it's used a

1 lot too.

2 Presence of the studies shows a lot of human use.

3 There are three epidemiological studies, time-related
4 studies, cohort studies, case control studies.

5 DIRECTOR DENTON: Joe, they can't hear.

6 COMMITTEE MEMBER LANDOLPH: They can't hear?

7 Okay, I'll be louder. Sorry.

8 And there are a number of animal studies,
9 long-term diet studies in rats. There are three of them.
10 And evidences of tumors coming up in there. Transitional
11 cell carcinomas of the renal pelvis.

12 Authoritative body studies, I couldn't find any.

13 Genotox studies, the usual mutagenesis and
14 unscheduled DNA repair synthesis are negative. There are
15 positives for chromosomal aberrations and sister chromatid
16 exchange. And it's metabolized to aspartic acid and
17 methanol and phenylalanine.

18 So I guess I come down on the side of this of
19 unfortunately somewhere between low and medium. So I'm
20 going to come down on medium. It's a difficult one to
21 deal with and the data is not great. But I think maybe we
22 take a small look at it would be appropriate.

23 The next one was benoxacor. The nature of the
24 exposure, mainly it's an inert ingredient in herbicidal
25 formulations containing metalachlor. And it's used in

1 greenhouse flowers, corn, soybeans, peanuts, et cetera.
2 So exposures occur occupationally in that setting and by
3 consumers buying treated flowers and eating treated food
4 crops. So there is some significant human exposure there.

5 No epidemiological studies.

6 There are two animal studies.

7 Authoritative bodies. Yes, the EPA did look at
8 benoxacor. And they said it cannot be determined whether
9 it is carcinogenic or not, but it was suggestive, so
10 they're obviously struggling with this too, based on
11 increases in non-glandular forestomach tumors in male and
12 female mice and rats. But these tumors have questionable
13 relevance to humans. So they're sitting right on the
14 fence. And there are also ovarian cysts induced in female
15 mice and rats, but they're not malignant.

16 The genotoxicity data is pretty much negative for
17 it across the board. So I put this in the low category
18 for study.

19 The next one was triclosan. Everybody knows
20 about triclosan. It's a synthetic broad-spectrum
21 antibiotic. It's used in many products, hand soaps,
22 everyday products, deodorants, toothpaste, laundry
23 detergents, facial tissues, diapers, kitchen utensils, et
24 cetera. So it's all over the place. A lot of human
25 usage.

1 Presence of study. No epidemiology studies. Rat
2 study was negative. Hamster was negative. Mouse study
3 was positive in males and females in the liver, which
4 always leads to arguments as to whether that has human
5 relevance.

6 The authoritative body studies. The EPA ruled it
7 as not likely to be carcinogenic to humans. And their
8 rationale was that it stimulates the PPAR-alpha receptor
9 and gives liver cancer in mice. And their argument was
10 that quantitatively it would be implausible that it was
11 carcinogenic to humans. Those arguments are not
12 incredibly strong. They are logical, but they're not
13 incredibly strong.

14 So overall, I rank that in the low category for
15 triclosan.

16 The next one was tris(1,3-dichloro-2-propyl)
17 phosphate. And the nature of exposure. It's a flame
18 retardant. And it's used in foams, resins throughout the
19 U.S. and Europe. It's incorporated into polyurethane
20 foam. And it replaces pentaBDE. And it's used to treat
21 fabrics and upholsteries. So the general population is
22 exposed by inhalation, dermal exposure. Where these
23 materials were treated with this are found, in homes,
24 offices, wherever people contact tris-treated upholstery,
25 there can be potential exposure. Automobile and truck

1 upholsteries and draperies, et cetera.

2 Presence of the studies. No cancer epidemiology.

3 Animal studies. This one had stronger animal
4 studies. There was a rat study, where they had renal
5 tumors in males and females. Male testicular tumors,
6 which was dose-dependent. Hepatocellular tumors in male
7 and females and cortical adenomas. So this had a strong
8 animal database.

9 Genetox was pretty much negative.

10 Authoritative bodies not evaluated by IARC nor
11 EPA.

12 Most of the genetox data is negative.

13 So I ranked this one in the medium category,
14 based on the strong animal studies and multiple tissues in
15 dual species.

16 The next one was tetrachlorvinphos. Nature of
17 exposure. On organophosphate insecticides, used on pet
18 flea and tick collars. Used in agriculture. Dermal
19 application to livestock, larvicide in cattle, et cetera.
20 Used on crops, cotton, grains, fruits, vegetables.

21 Occupational exposure occurs where it's used or
22 applied on farms, ranches, poultry houses. The general
23 population may get exposed to it, when they apply pet
24 collars or powder to their pets or for certain residential
25 usage. So there is usage and exposure to the general

1 population.

2 Presence of the study. No cancer epidemiology.
3 There were animal studies. Let's see two in mice. And
4 long-term dietary studies in rats, two of those. And
5 there were tumors of the thyroid gland in the rats.

6 Authoritative bodies. In 1983, IARC indicated
7 that there was limited evidence for the carcinogenicity in
8 animals. And insufficient evidence for carcinogenicity in
9 humans.

10 And the female and male mice studies showed a
11 dose-dependent hepatocellular carcinoma induction. There
12 was some genotoxicity in yeast and mouse bone marrow, so
13 there was some genotox data.

14 And I think that's it. So overall I listed it as
15 medium for consideration. And I think that -- I still
16 have two more.

17 The next one N,N-diethylthiourea.

18 Nature of exposure. It's a corrosion inhibitor
19 in ferrous metals and aluminum alloys, used in
20 vulcanization acceleration in rubber manufacture, and in
21 some types of paints. You see exposure in the
22 occupational setting. And to consumers that are in
23 contact -- that contact products containing this material,
24 particularly people using rubber wetsuits, because it's
25 contained in the rubber. So there is some human exposure.

1 Presence of studies. No epidemiology studies
2 were found. Animals negative. NCI mouse study. Feeding
3 study in rats where they get follicular cell carcinomas
4 and thyroid tumors in the males. And follicular
5 carcinomas in males and females.

6 Authoritative body listing. IARC listed it is as
7 Category number 3, which means it can't be determined
8 whether it's carcinogenic to humans. Limited animal
9 evidence for the carcinogenicity. Inadequate evidence in
10 humans for the carcinogenicity.

11 And I have more extensive notes, but based on
12 that and the genetox data added together, I listed it as
13 low for consideration.

14 The last one I have is permethrin. Nature of
15 exposure. It's a Type I pyrethroid insecticide. General
16 use pesticide used on food and feed crops, tree nuts and
17 lettuce, on livestock, pets, clothing, structural pest
18 control residual use, mosquito abatement, and to treat
19 head lice and scabies. So there is exposure to the
20 general public and workers in the occupational setting
21 that are also exposed.

22 Presence of the studies. Again, no cancer
23 epidemiology. Animal studies, there actually are a number
24 of studies done. There's one, two, three, four, five
25 mouse studies and two rat studies. And there are some

1 positive in the mouse studies for benign and malignant
2 tumors. The rat studies seem to be pretty much negative.

3 The EPA has dealt with this. And they said it's
4 likely to be carcinogenic by the oral route in 2002. In
5 1990, WHO said the oncogenic potential was low. Occurred
6 in the male mice. Probably an epigenetic acting agent.
7 In 1991, IARC said it was inadequate for carcinogenicity
8 data in animals and not classifiable for humans. And then
9 the last one, EPA said it was likely to be carcinogenic to
10 humans by the oral route.

11 Let's see, the genetox data is pretty much
12 negative. There's ambiguous data for clastogenesis. And
13 no epidemiology data on this at all.

14 So I rank this one in the medium category, based
15 on a number of positive animal studies.

16 That's it.

17 CHAIRPERSON MACK: Okay. Does anybody on the
18 Committee wish to comment on those rankings?

19 All right. David, would you go ahead now.

20 COMMITTEE MEMBER EASTMOND: Okay. Let me start
21 with diethanolamine. And just give everyone a second to
22 get there. Diethanolamine has widespread usage, primarily
23 as component of metal working fluids. So it's estimated
24 that over a million people in the U.S. are exposed. So
25 exposure is quite -- certainly high, and it's an

1 occupational exposure. But also I believe it's found in
2 consumer products as well.

3 NIOSH concluded there was substantial evidence
4 linking these metal-working fluids with various types of
5 cancers. But there are many other components of these
6 metal-working fluids, so it can't be attributed directly
7 to diethanolamine.

8 In animal bioassays, it's tested by the National
9 Toxicology Program in mice and rats. It was positive
10 in -- with certain types of -- several types of tumors
11 within the liver of the mice. And also kidney tumors were
12 seen in male mice.

13 No tumors were seen in the F344 rats. And there
14 was no increase in skin tumors seen in a transgenic mouse
15 model for cancer.

16 So there's actually been some work on mechanisms.
17 And it's believed that mode of action is -- at least
18 there's a plausible mechanism for the mode of action for
19 the liver tumors, which is believed to be much -- and for
20 this mode of action, the animals are -- the mice are
21 believed to be much more sensitive than the rats. And
22 both of those would be more sensitive than the humans.

23 Anyway, this has been reviewed previously by
24 IARC. And they placed it in Group 3 as not classifiable.
25 They consider the animal evidence limited and human

1 evidence inadequate.

2 The NTP did indicate that there was clear
3 evidence of carcinogenicity in the male mice and the
4 female mice, but not in the rats. But the NTP has not
5 listed it in the annual review of carcinogens.

6 Looking at this, I put this in sort of the medium
7 category.

8 The next one is diisononyl phthalate.

9 This is a plasticizer used in various consumer
10 products. And of most concern infants and toddlers are
11 most exposed, due to its use in soft toys and other
12 similar products. There's a lot of hand-to-mouth sorts of
13 things. So concern about widespread exposure and
14 particularly in children.

15 There were no real epidemiological studies
16 available.

17 But there were some animal studies. In one study
18 conducted by Covance, using rats, there were liver
19 cancers, and mononuclear cell leukemias, which were seen
20 in both the female and male Fischer 344 rats.

21 Renal tubular carcinomas were also seen in the
22 male rats. There was a follow-up -- or another study. It
23 was done by Lington. And they saw liver cancers seen in
24 the high dose in Fischer 344 rats. They also saw
25 mononuclear cell leukemia in both male and female rats.

1 And in mice hepatocellular carcinomas have been seen in
2 male and female mice. So there's quite a bit of evidence
3 in animal models for different types of tumors.

4 The phthalates are proposed to act to cause their
5 liver tumors through a mechanism involving PPAR-alpha,
6 peroxisome proliferation receptor alpha. So these act as
7 agonists on the receptor and stimulate proliferation.
8 There is some question right now about whether that
9 mechanism actually is true. Some of the phthalates have
10 been tested in PPAR knockout mice. And they still cause
11 liver cancer. So there's -- what was thought to be a well
12 established mechanism, may not be really correct. This
13 has not been reviewed by IARC. And the EPA had expressed
14 some concerns about carcinogenicity.

15 Because of the animal studies and the positive
16 results seen and particularly the widespread exposure and
17 particularly the exposure to children, I would put this in
18 the high-priority category.

19 The next one is hydroquinone. And I should
20 mention that I have done some studies on hydroquinone on
21 the genotoxicity of hydroquinone, just for the record, but
22 I don't think it would influence things too much.

23 Hydroquinone is widely used as an industrial
24 chemical. It's actually used as a pharmaceutical for skin
25 lightening in certain cases. It's a natural product or

1 can be formed from natural products in your stomach during
2 acid hydrolysis. And it's also a metabolite of the well
3 known carcinogen benzene.

4 There are a number of epidemiological studies
5 that have been conducted, but none of those detected
6 significant increases in cancers.

7 The National Toxicology Program tested
8 hydroquinone in their animal bioassays. And it was
9 reported to induce hepatocellular adenomas in the male
10 mice in one study and in female mice in another. So
11 that's two different studies. And in rats, it was induced
12 renal cell adenomas in two studies.

13 So the NTP concluded that there was some evidence
14 for tumorigenicity in the male rats due to renal adenomas
15 and some evidence in female rats due to mononuclear cell
16 leukemia, and some evidence in female mice due to
17 hepatocellular tumors.

18 Another study by Shibata et al. reported that
19 hydroquinone-induced hepatocellular adenomas in male mice
20 and renal adenomas, which they thought were really due
21 secondary to nephropathy toxicity in the kidney in the
22 male rats. So there are some reports. Now these tend to
23 be at very quite high doses with hydroquinone where you
24 see these effects.

25 IARC has evaluated hydroquinone and concluded

1 that there was inadequate evidence in humans and limited
2 evidence in animals. It was placed in Group 3, which
3 means it's not classifiable for carcinogenicity in humans.
4 It has been implicated -- hydroquinone has been implicated
5 in some mechanistic studies of benzene. But clearly, the
6 benzene story involves other issues. Hydroquinone alone
7 is not responsible for benzene, but it may play a role in
8 combination with other metabolites.

9 And there is some limited evidence of
10 carcinogenicity of 1,4-benzoquinone, which is a metabolite
11 of hydroquinone. Some fairly obscure studies. But just
12 because I work in this area, I'm familiar with it.

13 Given the animal tumor evidence -- oh, I should
14 say it's been tested in a wide range of genotoxicity
15 studies. It tends to be clastogenic in vitro and in vivo
16 when given by IP administration. That's because there's
17 efficient detoxification of phenolics in the intestine and
18 liver. So the benzene -- people who work with benzene try
19 to bypass those, because you're looking at metabolism
20 formed in the liver. But from a human exposure point of
21 view, there's certainly an added level of protection
22 because of Phase II conjugation in the liver and in the
23 intestine.

24 Anyway, I put this at sort of medium priority.

25 The next one perfluorooctanoic acid PFOA, and

1 related products.

2 This compound has widespread exposure due to its
3 use in water repellent, teflon, other industrial products.
4 So there's widespread exposure. It's actually quite --
5 there's concerns because of some accumulation in
6 biomonitoring studies that have been seen, the presence of
7 PFOA in individuals. So there's certainly concern among
8 the public about this compound.

9 With regards to the epidemiological evidence,
10 there have been a number of studies. They don't seem to
11 show really very consistent results. One study showed an
12 increase in prostate cancer associated with exposure. But
13 a follow-up study, which has more accurate exposure
14 estimates, did not -- was not able to confirm that
15 association. It essentially disappeared when they used
16 more accurate exposure estimates.

17 And there was a report of a non-significant
18 increase in liver and bladder cancer, in a PFOS
19 manufacturing facility. But again a follow-up study
20 provided little evidence for the bladder cancer risk. So
21 there's some suggestive stuff in the humans, but not
22 really consistent or no consistency that I can see.

23 In a dietary study in rats, there's some evidence
24 that PFOA is carcinogenic, inducing liver adenomas. I
25 guess there's -- modest increases were seen in two

1 studies. Leydig-cell tumors were seen -- increase we're
2 seen in two studies, and pancreatic tumors. These tend to
3 be adenomas I believe.

4 These were actually seen in one study, the second
5 study. And then they went back to the first study and
6 there was some supportive evidence for that. It's kind of
7 a judgment call on whether you fall on one side of the
8 line or the other. There was also an increase in mammary
9 fibroadenomas that did not exceed historical controls, so
10 that was not considered to be super strong.

11 This compound is generally negative in
12 genotoxicity tests. Although, it has been reported in a
13 number of studies to cause chromosomal aberrations in
14 polyploidy in vitro.

15 According to the EPA Science Advisory Board,
16 there's evidence that PFOA hepatic effects are due to this
17 PPAR agonism, and that the Leydig-cell tumors and the
18 pancreatic tumors probably did not represent a significant
19 cancer risk due to differences with receptors and
20 toxicodynamics between rats and humans.

21 There have been some other studies. PFOA has
22 been tested actually in a trout model. And there was
23 reported acts as a tumor promoter. And mechanistically,
24 they believed it didn't act through PPAR-alpha peroxisome
25 proliferation, but it was working through an estrogenic

1 signaling. I believe this used some microarray approaches
2 to doing this.

3 So I'm not sure about the latest. I believe the
4 EPA Science Advisory Board Panel in 2005, this was a draft
5 report, thought that it likely was carcinogenic in humans,
6 but I don't know if that's been finalized or how that's
7 played out.

8 Anyway, I look at this -- for me, this is
9 driven -- I think the human epi is pretty inconsistent.
10 The animal studies are -- there is some reproducibility,
11 not super strong, but they're there. Because of the broad
12 widespread public concern about this, I think it's
13 something we probably ought to put as a higher ranking.
14 So I'd put this in this medium-to-high ranking, which you
15 love.

16 (Laughter.)

17 COMMITTEE MEMBER EASTMOND: So I guess in the --
18 as far as simply because of public concern, I'd probably
19 bump it up into the high, but that's a judgment call.

20 The next one is thiamethoxam.

21 I hope I'm pronouncing this right. This is a
22 commonly used neonicotinoid pesticide. It's one of the
23 new classes of pesticides. And in my review, there was no
24 epidemiological studies available. It had been tested in
25 mice and rats. It was negative in the rats. However, the

1 EPA Science Advisory Board concluded that the rats had not
2 been tested at a sufficiently high dose.

3 And so that an MTD had not been achieved, so that
4 rats become somewhat debatable. In both the male and the
5 female mice, it was associated with an increase in liver
6 adenomas and carcinomas. So liver cancers.

7 As far as genotoxicity studies, it's been
8 negative pretty consistently. The mode of action is not
9 clear, but appears to operate through two of its
10 metabolites. And these are basically formed at much lower
11 levels in rats than in mice, and humans, based on liver
12 fractions would be expected to be produced at even lower
13 concentrations than in the rats.

14 So initially, I think in 2000, the EPA thought
15 that -- classified it as likely to be carcinogenic in
16 humans. However, apparently, there was a follow-up
17 review. There was a lot of additional mode-of-action
18 studies have been conducted. And apparently, after
19 re-review, the EPA decided to list it as not likely to be
20 carcinogenic in humans, because of this difference in
21 metabolism and toxicokinetics.

22 I looked at this, given kind of the evidence, and
23 put it in the moderate category, simply because of the
24 widespread exposure, and you had things in both male and
25 female mice.

1 That's the end of mine?

2 No, triethanolamine.

3 Triethanolamine, again is -- has extensive
4 exposure. It's used as an intermediate in the manufacture
5 of soaps. And it's one of these used in metal working
6 fluids. So when I mentioned before about NIOSH has
7 concluded there's quite a bit of evidence linking a
8 variety of cancers with metal working fluids. But there's
9 so many things in these metal working fluids that you
10 can't really attribute it to triethanolamine.

11 But anyway, this compound was tested by the NTP
12 in dermal studies. They reported an equivocal increase in
13 kidney adenomas. They were increased in hepatic tumors in
14 mice. But these could not be interpreted due to infection
15 with helicobacter hepaticus.

16 There was a follow-up NTP study done in 2004, and
17 they concluded there was equivocal evidence of liver
18 hemangiosarcomas in male mice and some evidence of liver
19 tumors in female mice. There was a follow-up study by
20 another group, which dosed animals in drinking water, and
21 reported modest increases in liver tumors and renal cell
22 adenomas, and endometrial stromal sarcomas. However,
23 these authors did not believe that these tumors were
24 biologically significant.

25 Triethanolamine was non-mutagenic in NTP genotox

1 tests. And it's been proposed that they work through a
2 mode of action similar to the diethanolamine. However, it
3 appears to be much less potent than the diethanolamine.

4 IARC reviewed this and considered there was
5 inadequate evidence. They placed it in Group 3.

6 And anyway, so in my evaluation, I considered
7 this to be a fairly low priority.

8 CHAIRPERSON MACK: Thank you, David.

9 Does anybody want to comment on those rankings?

10 Okay, Marty, would you like to go ahead.

11 COMMITTEE MEMBER HOPP: I'd like to go
12 alphabetically, if you don't mind.

13 Is that better?

14 I'd like to go alphabetically.

15 The first one is 2-amino-5-nitrothiazole.

16 This is a veterinary antiprotozoal agent,
17 commonly used in farms and for farm animals. It's
18 exposure to humans is indirect and has no direct exposure
19 via foods, but there is some exposure to humans via its
20 use in azo dyes.

21 Better?

22 Sorry.

23 So its exposure to humans is, I would call,
24 minimal. There have been no epidemiologic studies
25 associating this with human cancers. This chemical was

1 reviewed by IARC in 1987 and thought to be of low risk for
2 carcinogenicity.

3 Since that time, there have been one significant
4 study on mouse lymphoma assays. This has been shown to
5 cause granulocytic leukemia. And lymphomas in Fischer
6 rats, male Fischer rats, and not in female Fischer rats.
7 That is the only significant study since the IARC
8 clearance. Because of the low exposure to humans and lack
9 of any further data since the last IARC review, I put this
10 in a low category for review.

11 The next that I have is methyl ethyl ketoxime,
12 MEKO, M-E-K-O.

13 This is an industrial antioxidant. It's an
14 anti-skinning agent in paints. It's also used in multiple
15 adhesives and in boiler cleaners, industrial boiler
16 cleaners.

17 This is -- again, there is no epidemiologic data
18 to correlate with humans yet on this material. However,
19 chronic inhalation studies in rats have shown primarily
20 methemoglobinemia, which has been associated with
21 lymphomas and leukemias in humans. The direct tumor
22 effect on mice have been on liver carcinomas, over a long
23 period of exposure, particularly about two years of
24 exposure.

25 And with that increased exposure, I would

1 consider the incidence of tumors to be moderate, rather
2 than severe after a high dosage.

3 This has not been reviewed in the past by IARC or
4 any other agency. And I think its carcinogenicity testing
5 is low, and its human exposure is medium. Because of the
6 human exposure, I do think that this would fall in the
7 medium category of evaluation.

8 Next is nitrofurantoin. This is a very, very
9 common medication used for treatment of urinary tract
10 infections. It's a widespread exposure. I would -- even
11 though it's rated here as medium, I would consider it to
12 be much wider spread than marked here in our exposure
13 categories. It's a fairly common medication, I would say.

14 This has been a -- it's a primary reason why I
15 believe it's on this list is its relationship with other
16 carcinogens, particularly 5-nitrofurantoin. And it's
17 similarity to that medication -- to that drug itself is
18 very carcinogenic.

19 However, the nitrofurantoin itself during testing
20 has not been found to be significantly carcinogenic,
21 except for occasional osteosarcomas in a low dose in male
22 rats. This has -- this is one of the more extensively
23 studied antibiotics that's in human use and was reviewed
24 in 1990 and found not to be of significant risk to humans.

25 Since 1990, there have been one significant study

1 on injection of the material. And, again, the
2 carcinogenicity at this time was found to be low in rats.
3 And so I would still -- even though this has wide exposure
4 in humans, I think the carcinogenicity studies have not
5 significantly changed since the IARC evaluations. And I
6 would put this in a low evaluation.

7 Next is N-nitrosoanabasine.

8 This is a component of cigarette smoke, which is
9 a big topic today. It has wide exposure among cigarette
10 smokers, as well as those exposed to secondhand smoke.
11 This is a -- it falls in the nitrosamine category. Very
12 similar to other nitrosamines that have been evaluated and
13 found to be carcinogenic.

14 This was reviewed in 1987 and found to have a
15 limited carcinogenicity. Since that time, there have been
16 more genotoxic testing that's been positive. However, it
17 does lack further carcinogenicity testing, which is a
18 little confusing to me.

19 I think on the basis of its structure and prior
20 carcinogenicity data, as well as the exposure, I would put
21 this in the medium category, not because of any further
22 data that's available, but because of its past data and
23 its wide exposure, I believe.

24 I think this is a high likelihood of being
25 carcinogenic. My own personal opinion, after looking at

1 this data.

2 Next is N-nitrosohexamethyleneimine.

3 This is an explosive -- this is a material that's
4 found in explosives for military jet fighter planes. This
5 has very, very limited exposure, except if you're a jet
6 fighter pilot.

7 If you are, I think that there's significant
8 studies here to relate this chemical to tumors of the
9 liver, esophageal tumors and nasal turbinates. I was
10 saying I believe that this has limited exposure. However,
11 the exposure that has been seen -- has created tumors of
12 the liver, esophagus and nasal turbinates.

13 Better?

14 (Laughter.)

15 COMMITTEE MEMBER HOPP: So the summary of this is
16 that the carcinogenicity of this material seems to be high
17 during these studies, but the exposure to humans is
18 limited. But to those humans that it is exposed to, I
19 believe it is significant. And therefore, I would put
20 this in a high category.

21 Last, but not least, is 5-nitro-o-toluidine.

22 This is a dye used in the textile industry. And
23 it is amongst other pigments -- in pigment synthesis azo
24 dyes and I think a fairly common usage and exposure and a
25 widespread human value.

1 This has no cancer epidemiology studies in humans
2 unfortunately. However, it has been fairly extensively
3 studied, the last of which was by IARC in 1990. At that
4 time, it was considered a risk for carcinogenicity.
5 However, it did show some hepatocellular carcinomas, which
6 I think is the biggest concern for this material.

7 Since the last review of IARC, however, the only
8 significant study that I could evaluate was that in 1994,
9 which again related this material to hemoglobin additives
10 and possible erosion of hemoglobin, but it didn't seem to
11 me to affect, what I would expect, the leukemias or
12 lymphomas or any other hemoglobin or red cell type of
13 carcinogens.

14 So in view of the lack of further carcinogenicity
15 studies, I would put this in the low category also.

16 CHAIRPERSON MACK: Thank you, Marty.

17 Does anybody on the panel want to discuss those
18 priorities?

19 Okay, then finally, Sol.

20 Yes, Martha.

21 COMMITTEE MEMBER HOPP: Did I miss one?

22 DR. SANDY: Sorry, you missed one. It's the
23 2,6-dimethyl-n-nitroso-morpholine.

24 COMMITTEE MEMBER HAMBURG: I'm so impressed that
25 people are watching, I have to tell you.

1 (Laughter.)

2 COMMITTEE MEMBER HOPP: Where am I?

3 Which one did I miss?

4 I'll pass to him and I'll be right back with you.

5 CHAIRPERSON MACK: Marty?

6 COMMITTEE MEMBER HOPP: Yes.

7 CHAIRPERSON MACK: Perhaps, we could wait till
8 you get that and we'll let Sol go first and then you can
9 put that on --

10 COMMITTEE MEMBER HOPP: Yes, let Sol go first
11 while I pull this up.

12 CHAIRPERSON MACK: Right.

13 COMMITTEE MEMBER HAMBURG: I was going to start
14 by saying there's only 6 of 38 left, but apparently
15 there's 7 of 38 left.

16 Okay, we're almost done. I don't think I've seen
17 this many organic compounds in one place since organic
18 chemistry.

19 (Laughter.)

20 COMMITTEE MEMBER HAMBURG: All right. The first
21 one is Anthanthrene. It's a product of combustion usually
22 from cigarette smoking or from gasoline. It's very
23 widespread. There is no human data to evaluate. Animal
24 data is available. There are a number of studies that
25 have confirmed some low incidence of tumorigenicity.

1 Genetic data is also available, although relatively poor.
2 The most recent data available is from 1983. And it was
3 reviewed by the IARC in 1983 and 1987.

4 Because of the lack of significant data, although
5 there was some widespread exposure, I would rank this as
6 low.

7 The next compound is 1,3-dichloro-2-propanol.
8 That has relatively widespread use. It's found as a
9 solvent for celluloids. It's also present in some foods.
10 Again, there's no human data available. However, the
11 animal data and the genetic data, as well as some of the
12 similarities between other agents make this of some
13 concern. And I actually rank this high.

14 The next compound is 1,3-dinitropyrene.

15 This is also a product of combustion. It is a
16 nitrated polycyclical aromatic hydrocarbon. That class of
17 compounds has been noted to have significant
18 carcinogenicity. The human data again is not available.
19 Animal data is relatively weak, I think, and the
20 genotoxicity data, and is available, but also relatively
21 weak. And I would rank this as low.

22 The next one is ethynodiol diacetate. It's a
23 progesterone commonly found in birth control pills. All
24 the data to date is in conjunction with the use of
25 estrogens. There's very little data available as a single

1 agent. It does have widespread use obviously. But the
2 data is relatively poor. And I would also rank this as
3 low.

4 The next agent is 3-monochloropropane-1,2-diol.
5 Interesting agent. It's widespread use is significant.
6 There's a significant amount of data in both animal and
7 genotoxic data, as well as similar data as a carcinogen in
8 other tumor models. That makes it of some concern. And I
9 would rank this as high.

10 And the last agent I was asked to evaluate is
11 3-nitrofluoranthene. It is a byproduct of an anesthetic.
12 It has relatively wide use. Human data aren't available.
13 Animal data is fair to poor. There is genotoxicity data
14 as well. And let's see, has it been reviewed in the past?

15 It was most recently -- there's some new data out
16 from 1999. Since it's relatively common use, I would rank
17 this in the medium level.

18 And that's my report.

19 CHAIRPERSON MACK: All right. Are you ready?

20 COMMITTEE MEMBER HOPP: I'm going to take a break
21 and get it right after the --

22 CHAIRPERSON MACK: Can't hear you, Marty.

23 COMMITTEE MEMBER HOPP: This material is not in
24 my current binder. I'll have to get it after the break.

25 So maybe I can return after the break and give it

1 to you.

2 CHAIRPERSON MACK: You guys don't have it down
3 there for him.

4 DR. SANDY: We do.

5 CHAIRPERSON MACK: Well, while we're getting it,
6 maybe I can make a remark. Can I do that.

7 DIRECTOR DENTON: Of course.

8 CHAIRPERSON MACK: I had hoped to be able to get
9 through the prioritization without discussing the results
10 of studies or the quality of studies. And not all of us
11 were able to do that, which means that I can't, in all
12 fairness, demand of you what I've not been able to enforce
13 upon us.

14 I would just ask during the comment period that
15 if you disagree with the prioritization, high, medium or
16 low, that you state your disagreement in the comment, if
17 you wish to make it, and provide us with the basis, i.e.
18 the basis of exposure, or the basis of the interpretation
19 of studies. I doubt if there's much difference of opinion
20 about the existence of studies.

21 But you obviously may change your interpretation
22 based on your interpretation of the study. But since we
23 don't have very much time and since we have 38 items, I
24 would just ask that you be brief and succinct when the
25 time comes, if you wish to dispute the categorization.

1 Okay. Are you ready?

2 COMMITTEE MEMBER HOPP: Yes.

3 CHAIRPERSON MACK: Shoot.

4 COMMITTEE MEMBER HOPP: The last chemical is
5 2,6-dimethyl-n-nitroso-morpholine.

6 This is a nitrosamine that has environmental
7 exposures to -- I'm sorry.

8 I apologize. This is a cyclic nitrosamine
9 associated with multiple other cyclic nitrosamines. And
10 has widespread industry and environmental exposures in the
11 rubber industry in workshops and metal workshops. Its
12 carcinogenicity is very similar to other cyclic
13 nitrosamines, which means that it's positive in multiple
14 rat studies. Human study epidemiology has been negative
15 so far.

16 However, on the strength of the animal studies
17 and its relationship to other cyclic nitrosamines, which I
18 particularly don't like, for human exposure I put this in
19 the high category -- high to medium category.

20 CHAIRPERSON MACK: Okay. Does anybody wish to
21 challenge either of Sol's or Marty's most recent
22 categorization?

23 Hearing nothing, then we proceed to a break now,
24 is that right?

25 DIRECTOR DENTON: Are you going to assume now

1 that the -- my count is we have nine high chemicals,
2 approximately 15 low chemicals in the low category and the
3 rest are in the medium category.

4 So is the panel assuming that that's the
5 prior -- do you need any further discussion or are you
6 ready to go to public comment?

7 CHAIRPERSON MACK: I think the only meaningful
8 discussion can be on a chemical-by-chemical basis. And so
9 we had the opportunity for that.

10 So what we're going to do now is take a break.
11 And if somebody wants to make a public comment, please
12 submit us a piece of blue paper. And I have to go back on
13 what I requested before, because I can't enforce your
14 avoidance of all interpretation.

15 But I would just plead with you that we really
16 want to get at the categorization itself and the judgment
17 as to why you wish it to be changed.

18 Okay. We'll have a 25-minute break.

19 DIRECTOR DENTON: No. We'll have a 15-minute
20 break and we'll come back at 11:25.

21 (Thereupon a recess was taken.)

22 CHAIRPERSON MACK: Let's begin. Before we start
23 with the blue cards, something has been brought to my
24 attention. And that is that I made the statement in the
25 beginning that probably a matter of "when" rather than

1 "if" each of these chemicals or each of these compounds
2 will be reviewed.

3 The question is whether or not, A, that's true
4 and, B, whether or not it's true I have any business
5 saying something as definitive as that.

6 And I probably have to admit that I don't.
7 That's not my call. It's the call of OEHHA. And the call
8 may be made in the far distant future as to whether some
9 of these chemicals will ever actually be reviewed. We're
10 in the job of prioritizing. And that means that we would
11 prefer that the ones we give high priority to are the ones
12 that are considered first, whether or not the ones at the
13 end of the list ever actually get addressed.

14 And because it's not my call to say that, I would
15 like to strike that comment from the record, and say --
16 I'll say it in some other way here, that because there is
17 evidence of carcinogenesis in most of these, they should
18 be considered for coming up before the Committee at some
19 point, but it's not for me to say whether they actually
20 will.

21 Although I would state my opinion that the ones
22 that we call a high priority should come up relatively as
23 soon as certain in the sequence.

24 Is that fair?

25 Okay. Now, where is Tim? Let me begin with the

1 people who want to comment on fluoride. We have limited
2 time. We have designated fluoride to be high priority.
3 As I look at the organizations that are represented by
4 these 7 blue cards, I don't think there are any who want
5 to decrease that prioritization to medium.

6 There are two who wish to do that.

7 Okay.

8 Then those are the two that I want to hear from,
9 I guess.

10 You guys are really trouble.

11 (Laughter.)

12 CHAIRPERSON MACK: Okay. Jay.

13 Yes, Carol.

14 CHIEF COUNSEL MONAHAN-CUMMINGS: Dr. Mack, I
15 don't know if you've mentioned it, but there does need to
16 be a timeframe limitation on the public comments,
17 especially since we have -- did you decide how much time
18 you wanted to give people.

19 CHAIRPERSON MACK: Right. I requested, I think
20 in the beginning, if I didn't, I meant to, that we would
21 only be able to accommodate five minutes per comment.
22 Most of the people who put comment requests down have
23 suggested that they don't want to speak for much more than
24 four or five minutes. But I'm going to try really hard to
25 hold you to that.

1 So let's begin with Jay, who is going to have a
2 comment on fluoride downgrade.

3 DR. MURRAY: Thank you, Dr. Mack and members of
4 the CIC.

5 Thank you a second time.

6 I'm Dr. Jay Murray.

7 I'm speaking on behalf of the Consumer Healthcare
8 Products Association. And I am going to put forth the
9 argument for why fluoride should not be a high priority.
10 Your background information indicated that there had been
11 no authoritative body that had reviewed fluoride since
12 IARC had done that in 19 -- I think it was 1987, and that
13 is true.

14 What it doesn't say is that there was an
15 extensive review by -- in 2006 by the National Research
16 Council, Committee on Fluoride in Drinking Water, which
17 was chaired by Dr. John Doull. And the conclusions of
18 that NRC 2006 review, I'll just read you a couple of
19 sentences.

20 On the epidemiology, their conclusion was, "The
21 human epidemiology study literature, as a whole, is still
22 mixed and equivocal." And on the animal studies, their
23 conclusion was, "The collective data from the rodent
24 fluoride toxicological studies do not present convincing
25 evidence of an association between fluoride and increased

1 occurrence of bone cancer in animals."

2 So you do have a NRC 2006 review that you can
3 rely on, even though that is not a Prop 65 authoritative
4 body.

5 The public health benefits of fluoride are well
6 recognized. Drinking water fluoridation is supported and
7 endorsed by many organizations, including the Centers for
8 Disease Control, and the U.S. Surgeon General. The
9 American Dental Association has weighed in on the safety
10 of fluoridation as well.

11 And, Dr. Mack, in your presentation, you had
12 mentioned that there was a new study that had come along
13 recently. And it wasn't clear to me which new study you
14 were referring to. There's a study --

15 CHAIRPERSON MACK: The relatively new study was
16 the one that occurred in 2006 by I think it's Bassin.

17 DR. MURRAY: The Bassin study.

18 Well, on the Bassin study, because there were two
19 possibilities when you said that -- and I appreciate you
20 clarifying that. The Bassin study was an epidemiology
21 study done at Harvard as part of Dr. Bassin's Ph.D.
22 thesis. And she reported an association between childhood
23 exposure to fluoride from drinking water and osteosarcoma
24 in males less than 20 years old, but not in females.

25 So this was a study that broke down into many

1 different groups. And the one group where they reported
2 an association was males less than 20 years old. The
3 epidemiology -- these studies, by the way, were based
4 on --

5 CHAIRPERSON MACK: Jay, I'd prefer you didn't get
6 into the details of the pros and cons. I understand your
7 point. I think you've made it. You've made the point
8 that there was a review and that that study may or may not
9 be perfect. When we actually discuss fluoride, we'll go
10 into that in great detail.

11 DR. MURRAY: I understand what you're saying,
12 but --

13 CHAIRPERSON MACK: I'm saying no more time.

14 DR. MURRAY: No more time on Bassin. But what I
15 want to tell you is there is a second newer study since
16 Bassin by Douglas et al. also at Harvard.

17 CHAIRPERSON MACK: I'm aware of that.

18 DR. MURRAY: And that study says don't put weight
19 on the Bassin study.

20 CHAIRPERSON MACK: Thank you. I appreciate it.

21 DR. MURRAY: And so, you know, I'd really urge
22 you to consider the NRC. And to summarize, human and
23 animal data are equivocal. Genotox conflicting. And I
24 recognize you're not making a listing decision today, but
25 you do want to have as high priority chemicals ones that

1 have a reasonable chance to be listed.

2 And if the NRC is correct that the data are
3 equivocal, it's going to be hard for that compound to meet
4 the clearly shown standard. Also, I urge you to consider
5 the benefits --

6 CHAIRPERSON MACK: Thank you, Jay.

7 DR. MURRAY: Thank you.

8 CHAIRPERSON MACK: And is there a -- is it Dr.
9 Pollick.

10 DR. POLLICK: Yes.

11 My name is Howard Pollick. Thank you for the
12 opportunity to talk to you today.

13 I am a clinical professor at the University of
14 California, San Francisco since 1981. I sit on fluoride
15 committees with the American Dental Association, with the
16 CDC, with the California Dental Association. I've already
17 submitted my remarks in writing with the California Dental
18 Association.

19 I just want to address four points. They may
20 increase in number, but depending upon the time.

21 CHAIRPERSON MACK: Very little time.

22 DR. POLLICK: Very little time, I understand.

23 So my objection is over the prioritization
24 criteria. The same standards should be applied, I
25 believe, for all of the reviewers. And just because

1 something is widespread in its use or that there's a lot
2 of studies did not lead all of the members of the
3 Committee to come to the same conclusion on
4 prioritization. And so that's a statement I wanted to
5 make.

6 Second of all, it's important that the public be
7 well-informed as to the meaning of prioritization and the
8 interpretation of prioritization.

9 Does it mean that, in fact, this Committee
10 believes that there is sufficient evidence of
11 carcinogenicity from the studies that were reviewed?
12 That's an important statement that needs to be made,
13 because it's not clear to me, that based upon the criteria
14 used in fluoride, that there is sufficient evidence,
15 positive evidence, of carcinogenicity.

16 As has been eloquently stated by Dr. Murray, the
17 IARC review indicated -- they gave it Category 3. The NRC
18 review of 2006 is important. The University of York
19 review of water fluoridation is important. And like I
20 say, I've submitted many comments, and I don't want to go
21 into the details of that, because I don't think this is
22 appropriate at this particular time.

23 And, you know, if there's any further questions
24 you have of me, I'd be happy to provide answers.

25 CHAIRPERSON MACK: I think it's fair to say, on

1 behalf of the Committee, that we do not feel that there is
2 sufficient evidence of carcinogenicity. We do feel that
3 there's widespread concern and that there hasn't been a
4 formal review in the form of an authoritative body
5 recently. And that such a review is probably appropriate
6 at this time.

7 DR. POLLICK: If I may just add. I think that we
8 welcome a review, because we feel that the evidence would
9 show that fluoride -- inorganic fluoride is not
10 carcinogenic and this would actually provide a lot of
11 support for the use of fluoride and its use in water
12 fluoridation, toothpastes, and dental products to prevent
13 tooth decay.

14 CHAIRPERSON MACK: I agree that it would show
15 that. So let's see what happens. We'll hope that, in
16 fact.

17 DR. POLLICK: So it appears that the
18 prioritization ranking will hold?

19 CHAIRPERSON MACK: I think, yes.

20 DR. POLLICK: Thank you very much.

21 CHAIRPERSON MACK: I know your point of view and
22 you've expressed it, and you don't -- you're not in favor
23 of changing the categorization.

24 THE COURT REPORTER: Can he identify?

25 MR. HIRZY: There are some pools in the

1 assessment that I'd like to point out if I may?

2 CHAIRPERSON MACK: Okay.

3 MR. HIRZY: My name is William Hirzy. I'm vice
4 president of National Treasury Employees Union Chapter 280
5 at EPA headquarters.

6 There are -- under human data, there should be an
7 X under the case series box. Under animal studies, there
8 should be an X in the tumor initiation promotion or
9 co-carcinogenicity studies. And there should be an X in
10 the other relevant data box. Hormonal activity disruption
11 and other mechanistic studies should also have an X in
12 them.

13 And if I may make one brief rebuttal to Dr.
14 Murray's comments --

15 CHAIRPERSON MACK: I really don't want you to do
16 that. We just don't have time.

17 MR. HIRZY: Well, there is no Douglas paper. EPA
18 is waiting for it and it doesn't exist. There's no
19 peer-reviewed study that is --

20 CHAIRPERSON MACK: When the time comes
21 undoubtedly we'll see it. Thank you.

22 CHAIRPERSON MACK: I'm sorry. I don't want to be
23 rude, but this can go on for days. And I realize it's not
24 your fault. It's our fault.

25 Now, I think we're done with the fluoride

1 discussion, because I think most of the other people who
2 wanted to speak would be in favor of a high priority for
3 review.

4 And I have heard nothing to change my opinion
5 about whether or not there should be a high priority of
6 review. I certainly don't think that means that we think
7 that fluoride is carcinogenic at this time.

8 Okay, I'm being asked that I should let everybody
9 speak.

10 So, Mr. Hirzy.

11 MR. HIRZY: Thank you. If I could just reclaim
12 say three minutes. I presume I talked about two minutes
13 before.

14 The fact that there is no Douglas Study I wanted
15 to expand on that point. When I spoke -- the NRC
16 recommended that EPA conduct a new risk assessment because
17 their current drinking water standard wasn't protective of
18 public health. It's been three years now since that
19 recommendation went in.

20 When last I spoke to the Division Director, Ed
21 Ohanian at EPA, and asked him where is that risk
22 assessment, he said we're waiting for the Douglas paper.
23 Now, what that tells me is that EPA is on the horns of a
24 dilemma. If nothing refutes the Bassin epidemiology
25 study, EPA is going to have to find fluoride to be a human

1 carcinogen, which means MCLG 0 and the end of the water
2 fluoridation program.

3 So EPA basically is waiting for some excuse not
4 to find EPA -- not to find fluoride a human carcinogen.
5 If it's going to happen, it's going to happen by the good
6 graces of the civil servants in California. It is not
7 going to happen in D.C.

8 And so I just urge you to take a look at the
9 age-specific exposure data on Epi studies that have not
10 found an association so far, which is what Bassin did,
11 which was the magic in finding the link.

12 CHAIRPERSON MACK: Thank you, Mr. Hirzy.

13 All right, David Kennedy.

14 DR. DAVID KENNEDY: Yes, I'll just take a second.

15 You were furnished by Dr. Thiessen who was on the
16 National Academies and not the National Research Council.
17 Some people are calling it National Resource. It's
18 Research. And that she furnished you what their committee
19 said.

20 They basically said that -- they didn't say it
21 was a "frank" carcinogen, but they did not consider
22 whether there was insufficient information on -- clearly
23 not carcinogenic was not applicable. And so the most
24 recent review is someplace in the medium range.

25 And she mentioned this document. This has been

1 through a whistleblower lawsuit. It was written by Dr.
2 William Marcus, who is a Senior Science Advisor, Office of
3 Drinking Water. And in there, he goes through in detail
4 why you have to consider the in vitro studies. It's
5 required by law. And they want to use, and you have had
6 submitted to you the Ames test. And he quotes a letter
7 from Dr. Ames to Upjohn saying it's not applicable to
8 fluoride. It's not an adequate agent. It's not an
9 adequate test. You need to look at the other tests. All
10 of them come out positive, sister chromatid exchanges,
11 mutagenicity.

12 That, plus in here, he took the 6,000 control
13 animals and showed that they actually were a medium-dose
14 animal, based upon the amount of fluoride in their legs,
15 bones, and --

16 CHAIRPERSON MACK: Please, please, please. All
17 of this is pertinent. All of it is pertinent to a
18 discussion of a listing, not for just a list of
19 prioritization.

20 DR. DAVID KENNEDY: When will that occur?

21 CHAIRPERSON MACK: Well, we don't know, because
22 we haven't gone through the remaining batch of chemicals.
23 It's not for me to say. All I can say is we have made a
24 decision about prioritization and it will occur sooner
25 rather than later.

1 DR. DAVID KENNEDY: Well, I understand --

2 CHAIRPERSON MACK: And it doesn't make any
3 difference. It's not today. And there will be adequate
4 time for this kind of discussion then.

5 DR. DAVID KENNEDY: Let's hope so. But one thing
6 that has remained to be mentioned is that when we're
7 talking about exposure levels, the rats that drank 79
8 parts per million fluoride had dysplasia of lip, tongue,
9 throat, cancer of the bone and cancer of the liver.
10 Dentists are painting 50,000 parts per million fluoride in
11 children's teeth in an application called varnish. And
12 dentists are applying 15,000. So where the rats overdosed
13 or underdosed?

14 CHAIRPERSON MACK: Thank you, Mr. Kennedy.

15 DR. DAVID KENNEDY: Dr. Kennedy.

16 CHAIRPERSON MACK: Dr. Kennedy.

17 Danny Gottlieb.

18 MR. GOTTLIEB: Good morning. Thank you all for
19 being here and doing the job that you feel is necessary.
20 I'm Danny Gottlieb. I'm a 71-year old retired food
21 scientist and agriculturalist having worked in those
22 areas.

23 I want to talk mainly about, for a couple
24 minutes, about critical mass in fluoride exposure. And I
25 submitted a chart earlier, which in considering --

1 following up on what you've said, we need to consider
2 exposure. Considering the exposure that I want to use an
3 example, one child that represents hundreds of thousands
4 in California going to -- just getting up in the morning
5 and not having enough food going to school and having the
6 breakfasts that the school gives. And then you have grape
7 juice, the grapes were sprayed with the cryolite
8 pesticide -- fluoride pesticide. And then eating pancakes
9 and the pancakes were -- the grain was fumigated with
10 sulfuryl fluoride.

11 And then that morning they do not brush their
12 teeth. In this particular town, they don't have fluoride
13 in the water. But through the day, the child is
14 accumulating this fluoride in the meals. The raisins were
15 sprayed with cryolite that they have in the school lunch,
16 and on and on. I won't get into detail.

17 But I'll summarize by saying or reading,
18 "According to the World Health Organization in combination
19 with certain other factors, sub-optimal nutrition, kidney
20 disease, a chronic fluoride intake of between two and
21 eight milligrams per day can produce the pre-clinical
22 stages of skeletal fluorosis."

23 What's happening is that you must consider not
24 just one application of fluoride, you need to look at the
25 critical mass of all the things that the children are

1 getting in the schools. And it's going to wind up in
2 crippling skeletal fluorosis. And who knows yet how
3 much -- and this all starts in kindergarten.

4 There's a new California law that says --

5 CHAIRPERSON MACK: Mr. Gottlieb, we really can't
6 go on about other things than cancer. And I don't think
7 you want to -- I don't think you want to change the
8 categorization. I just need you to stop now.

9 MR. GOTTLIEB: Okay. I understand your
10 constraint. I've submitted my packets and I hope you
11 study them and come to the right conclusions.

12 CHAIRPERSON MACK: Thank you.

13 MR. GOTTLIEB: This is a once-in-a-lifetime
14 chance to let the people that can do something about it
15 make the right decision.

16 Thank you very much.

17 CHAIRPERSON MACK: Thank you. Renée Sharp.

18 MS. SHARP: So I'll be really brief, because I
19 know that you know that we agree with your assessment.

20 But I just wanted to say a couple words, because
21 Dr. Richard Clapp, who is a professor at the Boston
22 University, School of Public Health was not able to
23 actually send his comments to you all in time and could
24 not be here today.

25 So I just wanted to read a couple of sentences

1 that he wrote in his comments that is applicable to when
2 you actually do look at fluoride in the future, which is
3 that, in general, he agrees with the National Research
4 Council's assessment of the epidemiological literature.
5 And notes that the most recent studies have included much
6 more focus on an individual level, of exposure estimates.
7 These studies should therefore be given more weight than
8 earlier group studies that failed to examine age and sex
9 specific associations between fluoride exposure and
10 osteosarcoma. He's also important to note just because we
11 had someone else coming up and speaking about why that's
12 not important.

13 So thanks.

14 CHAIRPERSON MACK: Thank you.

15 Chris Neurath.

16 MR. NEURATH: Yes. I'm Chris Neurath or Neurath,
17 the American Environmental Health Studies Project.

18 I will -- anything that I submitted in writing, I
19 won't repeat. But I'd note that the funding for OEHHA to
20 do these assessments is not unlimited. And so even
21 though, I agree that high is the right category, I'd like
22 to encourage you to do as high as possible, because if you
23 have five that are high, you may not get to number 5. So
24 this -- I know it's something the panelists said. We want
25 to make it medium to high, so I'm saying high plus.

1 You also said that if there was new exposure
2 information or studies, that you hadn't considered, that
3 this would be an appropriate time. I'm not going to
4 discuss the exposure. I submitted that all in writing,
5 but it's basically fluoride exposure is ubiquitous and
6 unavoidable, including at high levels, 48 percent of kids
7 in fluoridated areas have dental fluorosis, which is a
8 sign of over exposure.

9 As far as cancer, I do have additional
10 information, which is one slide that in -- and we can move
11 to it.

12 CHAIRPERSON MACK: We really can't do slides. We
13 just don't have time.

14 MR. NEURATH: It's already set up there. But
15 this is from Dr. Vyvyan Howard, Centre for Molecular
16 Biosciences, University of Ulster in Ireland, Northern
17 Ireland. He's a toxico-pathologist specializing in the
18 problems of toxic substances on the fetus and the infant.
19 And it's slide number 4 or 5, if you -- it's the one with
20 micrographs. I won't go into all his qualifications.

21 (Thereupon an overhead presentation was
22 presented as follows.)

23 MR. NEURATH: But, yes, this is the one.

24 You have the category of evidence of
25 genotoxicity, mechanisms and other. This is a other or a

1 new way of looking at cancer tissue dysgenesis. And I
2 will paraphrase from his couple sentences from what he
3 says.

4 It is widely recognized that congenital
5 malformations carry an increased risk of cancer. However,
6 they're generally observed naked eye and do not involve a
7 histological appraisal for them to be recorded. Tissue
8 dysgenesis, a condition that is not usually detectable by
9 the naked eye, but which requires microscopy, can also be
10 associated with an increased risk of the development of
11 cancer.

12 And he mentions several cases, other types of
13 cancer and things, testicular dysgenesis syndrome is a
14 classic one.

15 The relevance of tissue dysgenesis to the
16 association between fluoride and osteosarcoma concerns the
17 appearance of bone tissue following high fluoride
18 exposure. The photographs up there are photographs of
19 bone -- animal bone, which he says revealed a frankly
20 dysgenic appearance.

21 Although, it can be argued that this was a high
22 dose experiment, the effect of lower dose exposure to
23 fluoride, on a three-dimensional spatial arrangement of
24 bone, has not been widely investigated. As mentioned
25 previously, quite subtle degrees of tissue dysgenesis in

1 other systems have been associated with increased cancer
2 vulnerability.

3 So basically, he believes this is another marker
4 supporting the osteosarcoma or bone cancer linked to
5 fluoride.

6 CHAIRPERSON MACK: Thank you, Mr. Neurath. I
7 think that's probably enough. We get the message.

8 Jeff Green.

9 MR. GREEN: Yes, Doctor. For the record, My name
10 is Jeff Green. I'm the national director for Citizens for
11 Safe Drinking Water. I'll be very brief. I don't really
12 want you to change the prioritization.

13 My concern would be is if this procedure is
14 followed through, is that you eliminate all advocacy and
15 whether it's from one side or the other and that you take
16 it from a strictly straight line, which is very difficult
17 to do obviously.

18 But my main concern would be is that the primary
19 purpose of Prop 65 in the first place was to inform and
20 warn people obviously. And unfortunately, we get into the
21 fact about whether one person agrees or doesn't agree.
22 There's always somebody with a product that doesn't really
23 want that to happen. But I have to say that the specific
24 chemical or the specific thing that gets put in, not only
25 in the water, but in other places, unfortunately it also

1 has a sales tool out there that tells everybody it's the
2 greatest thing in the world.

3 And so there's a concept called sophisticated
4 user. That basically has to do with the fact whether
5 somebody can protect themselves. And so why I believe
6 that the process you're going to go through is extremely
7 important. And I'll end it with that.

8 Thank you very much.

9 CHAIRPERSON MACK: Thank you.

10 Jeanette Bajorek.

11 MS. BAJOREK: My name is Jeanette Bajorek. I
12 live here in Sacramento on the edge of Carmichael. The
13 Sacramento Suburban Water District has just fluoridated my
14 water, which means I pay their bills, but I can't drink
15 their water. I can't eat the apricots in my backyard. I
16 can't plant a garden this year, because everything is
17 polluted with the sprinkling water.

18 But that's nothing compared to the youngsters who
19 live in some fluoridated areas and are coming down with
20 osteosarcoma. This is a very, very painful disease. The
21 drugs don't reach it. Pain killers don't reach it.
22 There's no escape from the pain. But now there's
23 if -- and then they have to endure, what do you say,
24 cutoff the limbs. They have to endure that also before
25 they finally die from the disease.

1 If there's one bright-eyed tousle-headed kid
2 anywhere in the world who has to die this way, just
3 because their neighborhood was fluoridated, then I think
4 that's reason enough to ban it from the waters in
5 California.

6 CHAIRPERSON MACK: Thank you, Ms. Bajorek.

7 All right. Now let's move to people who want to
8 change the category.

9 Stan Landfair from DuPont. We've got three
10 people from DuPont, each of whom wishes to speak about
11 PFOA. Do we really need three, Stan?

12 MR. LANDFAIR: Yes, we do. But I can promise you
13 we'll be very efficient and very brief.

14 CHAIRPERSON MACK: All right.

15 MR. LANDFAIR: Okay, thank you.

16 And, yes, for the record, I'm Stanley Landfair,
17 law firm of McKenna, Long & Aldridge representing DuPont.

18 I just need to address some process questions
19 before my clients will address the substantive questions.

20 The first one, kind of -- I need to ensure that
21 our written comments have been distributed to the panel
22 and to the staff. Okay.

23 And now having asked that, the reason for asking
24 was because in the OEHHA -- I presume it was OEHHA who
25 prepared this handout that was on the table. There is a

1 blank in the column for new studies.

2 And in our comments, we did bring to the agency's
3 attention that there are two new recent studies submitted
4 regarding PFOA, both in 2008, one which is an EFSA
5 scientific review, which is an epidemiological study which
6 concludes that negative findings for four different
7 suspected types of cancer that have been addressed here.

8 And the other is a more recent Danish cohort
9 study on the issue of exposure that indicates that
10 exposure is decreasing and decreasing very rapidly.

11 So the other process point I need to ask is, our
12 clients will be brief, but will you entertain the question
13 of downgrading the priority? There is so much that we
14 find we agree in the oral analysis of the data and it
15 strikes us that, in our opinion, if we can say so, that
16 the proposed priority over-emphasizes the issue of
17 exposure versus the fundamental question of whether or not
18 the data would support listing in the first place.

19 PFOA is not a new question to this panel. It's
20 not a new question to other federal agencies that have
21 looked at it. And other agencies, like the EFSA and the
22 Danish cohort -- it's not just the trend, it's the
23 overwhelming conclusion that the existing data simply
24 would not support a finding that it should be listed. So
25 we just need to ask you in all earnestness, if you're

1 intent on reviewing it, would you please just hear us out
2 on why we think it should be downgraded in priority, and
3 we will be extremely brief.

4 CHAIRPERSON MACK: David Boothe.

5 DR. GERALD KENNEDY: Yeah. My name is Jerry
6 Kennedy and I'm a toxicologist with the DuPont company. I
7 retired April 1st, April Fool's Day. So that probably
8 tells you all you really need to know.

9 But I'd like to just take a minute and review the
10 facts. And Dr. Eastmond pretty well stated the facts.
11 This is an unusual situation, where we do have human
12 information to review, specifically with cancer, and
13 looking at the populations of people that have made and
14 used this chemical both at the 3M Company and then our
15 company. The cancer rates appear to be background noise
16 and no more. And that data is pretty solid. It covers
17 4,000 people at 3M that have worked with this material
18 since the fifties. And it covers about 6,000 of our
19 people that have worked with it about the same period of
20 time.

21 There's no question they've been exposed. And it
22 looks like the playback is favorable and that there is not
23 a cancer threat for following those exposures.

24 The Erickson study that was just mentioned looks
25 at background populations. They looked at -- or they had

1 recruited something like 57,000 people back in the
2 mid-nineties and followed those folks for cancer. And
3 they found roughly a thousand of those have developed
4 cancer by the year 2006. And those cancers -- all of
5 those folks had their PFOA levels measured. And the
6 people that had cancer versus those that didn't have
7 cancer in those populations, the PFOA levels were exactly
8 the same. So it doesn't look like there's an association
9 between cancer and that population and PFOA exposure. So
10 the human data looks pretty good, as good as can be
11 expected.

12 The word inconsistency just pops up I think when
13 you see 50 or 60 different endpoints, and some move up and
14 some move down.

15 The animal data, it's true that one species, one
16 sex does respond. The responses are benign adenomas of
17 three tissue types, the testes, the pancreas and the
18 liver. PPAR-alpha seems to be a mechanism that's
19 operative here. With 11 pharmaceuticals that act on the
20 PPAR-alpha receptor, when they're tested in this rat
21 strain, seven of those produced this exact same tumor
22 triad. And all of those drugs apparently are free of
23 cancer risks, as we know it today. So it looks like the
24 animal information is telling us that, yes, they can
25 respond, but that the mechanism of response might not be

1 human relevant.

2 And thirdly, the material appears to be
3 non-genotoxic. There's a wide variety of studies that
4 have been done, both routine-type studies and experimental
5 research-type studies. And then the main, when you look
6 at the weight of evidence, this does not seem to be a
7 genotoxic material.

8 So, I mean, to conclude that we think there's
9 a -- and I didn't mention, but the database for this
10 chemical is great. You complained about three-ringed
11 notebooks, well I have a collection of them too. There's
12 a lot of paper. There's a lot of information, but I think
13 it's pretty consistent that humans don't respond. The
14 animal data is one sex of one species. Female animals
15 don't respond non-genotoxic. And the mechanism of action,
16 the PPAR-alpha activation, appears to be not particularly
17 human relevant. So we didn't think there's much
18 information here to support listing this material as a
19 carcinogen.

20 CHAIRPERSON MACK: Thank you, Mr. Kennedy.

21 Mr. Boothe.

22 MR. BOOTHE: Dr. Mack, Dr. Denton, members of the
23 Committee, thank you for agreeing to allow us to speak. I
24 will be brief. My name is David Boothe. I'm with DuPont
25 Company. I'd like to persuade you against a high or

1 medium priority for PFOA, its salts and precursors. We
2 find ourselves, as you heard Stan Landfair and Dr. Kennedy
3 describing, in fair agreement with the assessment of the
4 science you heard Jerry Kennedy's summary there of our
5 views. But we do respectfully disagree with your
6 conclusions for a medium to high priority or ultimately
7 high priority.

8 A general concern, absent data that clearly
9 supports a priority, does not argue for a high or an even
10 medium priority. As we outlined in our comments, general
11 exposure is clearly declining at a rapid pace per the
12 NHANES data and the CDC, as well as the New York State
13 study that's cited and other data. Particularly, there is
14 a new study that just came out within the past month
15 indicating a constituency in Norway, where we see similar
16 declines.

17 That's attributed by the U.S. Environmental
18 Protect Agency to a PFOA stewardship program, that all
19 major players in industry are involved with to reduce
20 emissions, product exposure, and ultimately to go to
21 phaseout of these types of materials.

22 We would ask that the Committee consider whether
23 you see that there is a real risk here that justifies
24 further evaluation at all and the expenditure of resources
25 needed compared to other priority items that you may have.

1 So we respectfully ask that you reconsider your
2 position, categorizing the priority instead to a low
3 priority level, that we believe is fully justified by the
4 data and the science. And further, by the clear evidence
5 of declining exposure in the population to the stewardship
6 activities taking place.

7 Those are my comments. And I do thank you for
8 the opportunity.

9 CHAIRPERSON MACK: Thank you, Mr. Boothe.

10 MR. LANDFAIR: Just to return to a point of
11 process. If I can ask for the benefit of everybody, how
12 do we intend to proceed from here? Is there going to be a
13 vote at the end of the --

14 CHAIRPERSON MACK: I think the sensible thing to
15 do, rather than interrupt each time, is to wait until all
16 of the comments have been made and then the Committee will
17 discuss whether or not we want to change any
18 prioritization.

19 MR. LANDFAIR: That's fine.

20 Thank you very much.

21 CHAIRPERSON MACK: Sarah Janssen.

22 DR. JANSSEN: I'm not speaking on fluoride.

23 CHAIRPERSON MACK: Pardon me?

24 DR. JANSSEN: I'm not speaking on fluoride.

25 CHAIRPERSON MACK: No. We're long finished with

1 fluoride. You're speaking on many things, but not
2 fluoride.

3 DR. JANSSEN: I'm so sorry.

4 I'm trying to do too many things at once. Good
5 afternoon. My name is Sarah Janssen. I'm with the
6 Natural Resources Defense Council, where I'm a physician
7 and scientist. I also have an Assistant Clinical
8 Professor position at the University of California, San
9 Francisco, in the Division of Occupational and
10 Environmental Medicine.

11 And my comments are about the PPAR-alpha mode of
12 action, which we've already heard about once this morning.
13 I think this is relevant not just to PFOA, but to a number
14 of other chemicals under consideration, including DINP,
15 triclosan, and the -- my comment is that a new study,
16 which was just published, on May 15th in Environmental
17 Health Perspectives, which discusses whether or not
18 PPAR-alpha is a relevant mode of action for understanding
19 the relevance to human carcinogens.

20 And the conclusion of that study, which is
21 available free to everyone on-line, is that PPAR-alpha
22 alone is not a sufficient mode of action for causing
23 cancer, and that there are probably other relevant
24 molecular pathways that result in hepatocarcinogenesis,
25 and that we shouldn't dismiss PPAR-alpha as a mode of

1 action not being relevant to human cancer.

2 So that's my comment on PFOA. And if you will
3 take into consideration for also triclosan and DINP, I
4 don't have to come up again and speak.

5 CHAIRPERSON MACK: I think all of those comments
6 for each chemical is highly pertinent to the discussion of
7 listing.

8 DR. JANSSEN: Okay.

9 CHAIRPERSON MACK: Whether it's a major player in
10 the discussion of prioritization is another matter.

11 DR. JANSSEN: So I'll come back and speak again.

12 Thank you for your time.

13 CHAIRPERSON MACK: Thank you.

14 Lisa Navarro.

15 MR. LIVINGSTON: Dr. Mack, with respect to
16 triclosan, do you want to do that now or do you still
17 want --

18 CHAIRPERSON MACK: Yeah, we can do that now.

19 Whoever wants to go first.

20 You're Lisa Navarro, I gather.

21 DR. NAVARRO: Hi. I'm Lisa Navarro with Ciba.

22 Thank you for your time. I'd like to just read
23 one statement in response to the comments on the Guyton
24 publication. This is specifically a comment from the
25 Chief of the Pharmacokinetics Branch from the U.S. EPA, in

1 which he says, "I think the Guyton paper describes the
2 mode of action for DEHP, but does not provide insight into
3 PPAR and tumors in rodents versus humans. One of the
4 difficulties in environmental tox is that the chemicals
5 are biologically dirty. That is, they most likely have
6 multiple actions in a biological system.

7 "In contrast, drugs such as triclosan, have been
8 designed to have as few, preferably one, biological
9 action. Thus, DEHP has actions independent of PPAR that
10 lead to liver tumors in rodents. This does not negate the
11 hypothesis that PPAR activation in rodents leads to liver
12 tumors and that these tumors are not relevant to humans.

13 "In fact, the DEHP example cannot support nor
14 refute this hypothesis, since DEHP has actions that led to
15 liver tumors independent of PPAR."

16 CHAIRPERSON MACK: Thank you. Gene.

17 MR. LIVINGSTON: Pull my card.

18 CHAIRPERSON MACK: Pull your card. Okay, I'll be
19 happy to pull your card.

20 MR. LIVINGSTON: Thank you.

21 CHAIRPERSON MACK: Derek Gammon?

22 DR. GAMMON: Hello. I'm here to discuss
23 permethrin. First of all, thank you for the panel and for
24 OEHHA reviewing the permethrin toxicology package.

25 I'm a staff toxicologist -- sorry, I'm a Senior

1 Toxicologist at FMC Corporation, who are the principal
2 manufacturers of permethrin. I previously spent 16 years
3 working for DPR in this very building doing risk
4 assessments on pesticides.

5 The first point I'd like to make -- there's two
6 points really. The first point is that we believe that
7 you are incorrect, Joe, in claiming that there was an
8 increase in malignant tumors with permethrin in the mouse.
9 But in all five studies -- three of those five studies
10 showed an increase in either lung or liver adenomas, but
11 not in carcinomas. It's non-genotoxic.

12 The second thing is that we have some preliminary
13 data, which suggests from a mode of action standpoint,
14 that the mechanism is liver enzyme induction, P450
15 induction. And we have set up some experiments, which are
16 going to be conducted in the future to nail this one down.
17 And we firmly believe that when we've done these studies,
18 that permethrin will be reclassified as a rodent-specific
19 non-genotoxic carcinogen. So we'd humbly request that you
20 remove it from medium to low.

21 CHAIRPERSON MACK: Thank you.

22 Annette Shipp.

23 DR. SHIPP: I have no further comments to add. I
24 agree with the review of Dr. Landolph.

25 CHAIRPERSON MACK: Thank you.

1 Jay, do you want to discuss aspartame?

2 DR. MURRAY: Sure. Thank you. I'm Dr. Jay
3 Murray. I'm speaking on aspartame on behalf of the
4 Calorie Control Council.

5 And Dr. Landolph made the presentation on
6 aspartame and said that he was on the fence between a low
7 and a medium for aspartame, and shaded up to medium. What
8 I'm going to try and do is urge you to consider shading
9 the other direction from medium down to a low on
10 aspartame.

11 And the basis for that is that the background
12 materials that you received said that there were no
13 authoritative bodies that had reviewed aspartame. And I
14 want to correct that. The Food and Drug Administration,
15 which is a Prop 65 authoritative body, definitely reviewed
16 the carcinogenicity of aspartame.

17 You know, they went through this several times
18 back in the early eighties when aspartame was first
19 approved. And most recently, FDA has taken another look
20 at the potential carcinogenicity of aspartame as recently
21 as April of 2007.

22 And I won't spend the time to do this, but the
23 written comments that I submitted has the quotations from
24 FDA from their most recent 2007 review of carcinogenicity.

25 There's another authoritative body that has

1 weighed in on aspartame as well, and that's the National
2 Toxicology Program. There are three NTP transgenic mouse
3 studies of aspartame that have been reported in the last
4 five years. And all three of those studies were negative.
5 So you have not one but two authoritative bodies that have
6 recently expressed an opinion on aspartame.

7 Also, there are -- there's no shortage of
8 studies. There are a lot of epidemiology studies of
9 aspartame, but they are not positive studies. There are
10 lots of animal carcinogenicity studies of aspartame.
11 There are seven negative carcinogenicity studies and two
12 more carcinogenicity studies that are scientifically
13 inappropriate, unconventional studies, which have been the
14 subject of a number of peer reviews by others.

15 There is one additional piece of new information.
16 Four days after the deadline for written comments, there
17 was a paper by Schoeb et al. that was published in
18 veterinary pathology. And the significance of that
19 paper -- I'm not going to go through all the details of
20 that study. But the significance is the authors concluded
21 that it is more likely that what the authors of the
22 Ramazzini Studies interpreted as lymphoma was not, in
23 fact, cancer at all. That it was pulmonary lesions
24 related to a rampant infection of mycoplasma pulmonis
25 going through the rat colony. And if you look at the

1 incidence of broncho pneumonia in that study, it was as
2 high as 97/98 percent.

3 So you got seven negative studies and two really
4 bad studies, where it's questionable that they were really
5 seeing cancer when they were calling it as cancer.

6 So for those reasons, I won't take anymore time.
7 I would just encourage you to think about, you know, do
8 you really want to shade up to a medium or would it be
9 more appropriate to shade down to a low, given that
10 information.

11 Thank you.

12 CHAIRPERSON MACK: Thank you, Jay.

13 Fernando Suarez.

14 DR. SUAREZ: Good morning. My name is Fernando
15 Suarez. I am a toxicologist. I work for Syngenta
16 Corporation.

17 I just wanted to state that I agree with your
18 evaluation of our two products, thiamethoxam and
19 benoxacor. The only comment I wanted to make sure to
20 voice here is that during the presentation of benoxacor,
21 there was a list of crops that were mentioned as a
22 possibility that these products used. And although
23 that's, in fact, in the label of some of the products, for
24 benoxacor specifically, there is no economic benefit in
25 any of these crops, except for corn. In other words, the

1 only crop that we know for sure for certain that is
2 benoxacor's use is corn.

3 Other than that, I would like to make myself
4 available for any questions you may have and I thank you
5 for the time.

6 CHAIRPERSON MACK: Thank you.
7 Robert Barter.

8 DR. BARTER: Good afternoon. My name is Robert
9 Barter. I'm a toxicologist with ExxonMobil Biomedical
10 Sciences. And I'm here today providing comments on behalf
11 of the ACC Phthalate Esters Panel.

12 I'd like to try to persuade you to move the
13 prioritization of diisononyl phthalate from high to
14 medium. In Dr. Eastmond's description of the available
15 data for DINP and its prioritization as a high, he
16 indicated he had concerns in regards to exposure, as well
17 as in the tumor data available from animal models.

18 In regards to the exposure, first, I'd like to
19 point out that DINP is no longer used in toys that can be
20 placed in the mouth for children. This is done by
21 legislation in the State of California, reducing that
22 potential exposure.

23 Additionally, the Consumer Products Safety
24 Commission of the United States convened an expert panel
25 in the early 2000's to evaluate risk of DINP exposure To

1 children from the use of toys. If my memory is correct,
2 OEHHA participated on that expert panel. They considered
3 childhood exposure to DINP and cancer risk and determined
4 that there was no risk from cancer from exposure to DINP
5 in toys.

6 Finally, there's extensive biomonitoring data
7 available on diisononyl phthalate looking at urinary
8 metabolites of DINP. What has been found to date through
9 the NHANES database and the Centers for Disease Control is
10 that 75 percent of the human population, both adults and
11 children, have non-detectable limits of detection for DINP
12 in the urine. And secondly, when exposure is detected,
13 the exposure is exceedingly low.

14 In regard to tumors observed in animal models,
15 three tumor types were listed. All three of these tumor
16 types have been determined to be of no relevance to humans
17 in cancer risk assessment by various authoritative bodies.

18 Specifically, liver tumors observed in rodent
19 liver. Liver tumors observed in rats and mice for DINP do
20 work through peroxisome proliferation mode of action.
21 It's the only mode of action that's been established for
22 DINP in terms of liver tumor development.

23 The DINP meets all the criteria identified by
24 both IARC as well as ILSI in terms of establishment of
25 human relevance for these liver tumors.

1 As Dr. Eastmond noted, there is suggestive
2 evidence through a paper published in 2007 that indicates
3 DINP -- or excuse me DEHP can induce liver tumors in
4 PPAR-alpha knockout mice.

5 What's also known is that there's a high
6 spontaneous rate of liver tumors in these PPAR knockout
7 mice. And the postulated mechanism by the authors of the
8 paper Ito et al. indicated that there was likely an
9 increase in oxidative stress observed in these mice that
10 led to liver tumor development. In any study done with
11 DINP, there's been no observation of increased oxidative
12 stress in the liver.

13 Two other tumor types, the male rat kidney tumors
14 that were observed following DINP exposure, have been
15 deemed not relevant for human cancer risk assessment.
16 This is the alpha-2u-globulin mechanism. And DINP meets
17 all the criteria identified to indicate that this
18 mechanism -- or this mode of action isn't i-n place.

19 And in addition, the leukemias observed in the
20 Fischer 344 Rat are considered to be of no to little
21 relevance to humans by numerous authoritative bodies,
22 including EPA, NTP, IARC and the Consumer Products Safety
23 Commission.

24 In fact, NTP has moved away from the Fischer 344
25 rat due to the high spontaneous rate of these leukemias

1 observed in Fischer 344.

2 Finally, I would like to touch on one last
3 comment that was made that EPA had expressed some concern
4 for DINP in terms of cancer potential. This was done
5 through a federal register notice in 2000, in which DINP
6 was under consideration for the Toxic Release Inventory.
7 In 2005, after public comment was received, EPA revised
8 and reserved judgment on the cancer issue for DINP.

9 And we think that this data -- this information
10 taken in total should reduce the prioritization of DINP
11 from high to medium and potentially low.

12 Thank you for the time.

13 CHAIRPERSON MACK: Thank you, Mr. Barter.

14 Gary Van Riper. Is it Ripen?

15 DR. VAN RIPER: Van Riper.

16 CHAIRPERSON MACK: Van Riper. Got it. I don't
17 know of any other Van Ripers. I know some Ran Vipers.

18 DR. VAN RIPER: Well, it's a Dutch derivative way
19 back. Thank you.

20 Dr. Mack and panel members, I appreciate the
21 opportunity to talk to you. My name is Gary Van Riper. I
22 represent the International Molybdenum Association. And
23 I'm here as a member of the industry. I've had 34 years
24 of work in the Molybdenum industry. I'm not a
25 toxicologist. I'm an engineer. I'm here to talk about

1 exposure.

2 You mentioned there are two considerations that
3 were important. One of them was the prevalence and the
4 other one, the intensity. So I want to talk through those
5 to give you a sense of molybdenum trioxide, and that's the
6 chemical we're interested in.

7 From an involuntary exposure standpoint, we're
8 not aware of any consumer use or products that contain
9 molybdenum trioxide. It's a high-level intermediate that
10 does not make it down to the consumer level.

11 Moly, as we call it in the industry, Moly is
12 found in your house, in your stainless steel flatware and
13 so on. So it is found prevalent across the country, the
14 world. But it is in the alloy form. It's not in a
15 trioxide form. It's in a zero valence. It's mixed with
16 other metals, stainless steel. So there's really no
17 exposure to consumers in the state from molybdenum
18 trioxide. From a voluntary contribution or occupational
19 exposure level, first of all, the product tested by NTP,
20 there is no sale of that material in California, zero.
21 Further, there's only one facility in California that uses
22 Moly trioxide. It's a different chemical production
23 process. It's a catalyst fabrication plant. And they use
24 it in a wet process. So basically the drums or bags of
25 material come in, are dumped into mixers and added water

1 and then they go through and they're pelletized in a
2 catalyst form. So basically, there's very, very little
3 exposure to any kind of trioxide, even in this one
4 facility.

5 This facility meets exposure levels that are
6 1/100 the level of the lowest dose that was tested by NTP,
7 1/100. So we have minimal exposure on the industrial
8 side, on the occupational side and really no exposure on
9 the consumer side. So we would request that it be moved
10 from medium to low, simply based on lack of exposure.

11 And one additional point that I think is very
12 interesting is, and we pointed it out, but the NTP study
13 took a product -- and I say this was 1/100 of the level
14 that actually received by NTP. NTP further took that
15 product and micronized it to a level of 1.5 microns. So
16 all of the material they tested was 1.5 micron, which
17 makes it 100 percent respirable. The material that they
18 received is only .15 percent respirable. So they
19 increased the respirable fraction by 600 plus times into
20 the mice that were tested.

21 If you translate that back to the facility in
22 California that makes catalysts, it's thousands of times
23 different.

24 CHAIRPERSON MACK: Thank you, Mr. Van Riper.

25 DR. VAN RIPER: Thank you.

1 CHAIRPERSON MACK: I would propose that -- I will
2 try and read the list of chemicals that have been
3 commented upon. That each of the people who has reviewed
4 those chemicals, we'll take a 10-minute break and ready --

5 CHIEF COUNSEL MONAHAN-CUMMINGS: Dr. Mack, I
6 don't think your microphone is on.

7 CHAIRPERSON MACK: Pardon me?

8 CHIEF COUNSEL MONAHAN-CUMMINGS: Your microphone
9 is not on or we can't hear you.

10 CHAIRPERSON MACK: I'm sorry. My microphone is
11 on but my mouth wasn't close to it.

12 I would propose that we take a little bit of a
13 break, so that each of the people can consider whether or
14 not they want -- well, now it's on.

15 Each of the people on the Committee can consider
16 whether or not they want to change their categorization
17 proposal. And then we will speak to each of the chemicals
18 quickly.

19 Does that sound all right, Carol?

20 CHIEF COUNSEL MONAHAN-CUMMINGS: That's fine, as
21 long as the Committee isn't going to discuss that with
22 each other. It's just a thought process of your own,
23 right.

24 CHAIRPERSON MACK: Pardon?

25 CHIEF COUNSEL MONAHAN-CUMMINGS: So don't talk

1 amongst yourselves.

2 CHAIRPERSON MACK: Yes. No, no, no, don't talk
3 among ourselves. Everybody -- everything is open here.
4 It's bad, but it's open.

5 (Laughter.)

6 CHAIRPERSON MACK: Does everybody need a few
7 minutes or is everybody happy right now?

8 MS. SHARP: Can we just note something. There
9 were some of us who had actually written down several
10 chemicals on our cards. And since you aren't going
11 through chemical by chemical, we actually haven't gotten a
12 to chance --

13 CHAIRPERSON MACK: Would you like me to read the
14 names of the chemicals, is that what she is saying?

15 MS. SHARP: No, we're saying there may be a few
16 more comments.

17 COMMITTEE MEMBER EASTMOND: She has comments on
18 other chemicals.

19 DR. JANSSEN: I had other comments to mention.

20 MS. SHARP: I'm sorry. I'm Renée Sharp from EWG.

21 CHAIRPERSON MACK: If you wish to, please come up
22 and do it.

23 MS. SHARP: I also wanted to give other people
24 the opportunity. So I had been talking about fluoride,
25 because we're talking about fluoride. But I also just

1 wanted to note that in PFOA, I'd just want to talk for a
2 second, because I agree with your prioritization of PFOA
3 and DINP. But I do want to make one comment on PFOA,
4 because you did mention that the EPA Science Advisory
5 Council -- Board, sorry -- had done this draft likely
6 carcinogenic recommendation.

7 And then you sort of discounted it, because it
8 was only draft. And I just wanted to point out that that
9 may not be quite fair, considering how slow the EPA is.

10 CHAIRPERSON MACK: You're looking at me and I
11 didn't do that.

12 MS. SHARP: I'm looking at all of you.

13 Thank you.

14 COMMITTEE MEMBER EASTMOND: I am the one who did
15 that.

16 DR. JANSSEN: And I'm sorry. I wanted to make a
17 couple other comments. My name is Sarah Janssen. I'm
18 with the Natural Resources Defense Council.

19 First, on diisononyl phthalate or DINP, I wanted
20 to make a couple of points. One, there was a publication
21 by Silva et al., which is another group affiliated with
22 the U.S. Centers for Disease Control. They did a
23 follow-up study for looking at biomarkers of DINP exposure
24 in 2006. It was published in Environmental Health
25 Perspectives.

1 And in that study, which is not listed in your
2 recent studies, they found a subset of the population,
3 which was essentially adult men, when they looked for a
4 different metabolite than they looked for before, it was
5 an oxidative metabolite. They looked for three different
6 ones and they found them in over 97 percent of the people
7 in that study. These were not children. They weren't
8 sucking on rubber ducks or pacifiers. These were
9 exposures from sources that we don't understand, but we
10 know that there is widespread exposure to this chemical.

11 And then I'll just reiterate that the Guyton et
12 al. paper looking at PPAR-alpha agonist, identifying DEHP,
13 will also apply to DINP. We're not asking you to make a
14 decision about whether PPAR-alpha is a relevant mechanism.
15 We're asking you to make a decision about prioritizing a
16 chemical. And I would just urge you not to dismiss
17 prioritizing it based on a mechanism which has now been
18 shown to be probably not relevant to humans, but is also
19 not relevant to the development of cancer in animal
20 models.

21 The other chemical that I wanted to comment on is
22 a different chemical. It's the chlorinated flame
23 retardant TDCPP, which I think you ranked as being of a
24 medium priority. I wanted to urge you to increase the
25 prioritization for that chemical for several reasons.

1 One is TDCPP, if you may all remember, in 1977
2 was banned from children's pajamas, because it was found
3 to be a carcinogen. It was identified by the Consumer
4 Products Safety Commission as being, at that time,
5 mutagenic in bacteria.

6 Since then, the chemical wasn't banned from
7 production, it actually has found its way into our
8 furniture foam and the textiles that are used in carpeting
9 and curtains and other upholstery. It's actually being
10 used as a replacement for the polybrominated diphenyl
11 ethers, which have been banned in California and
12 voluntarily removed from production in the U.S.

13 This chemical is a high production volume
14 chemical produced in greater than a million pounds per
15 year. There's likely to be high exposure to it in the
16 population. And the Consumer Products Safety Commission
17 in their recent review have identified this as likely
18 carcinogenic to humans.

19 It is also quite structurally similar to other
20 chlorinated flame retardants, which are already on the
21 Prop 65 list identified as carcinogens, that's tris and
22 TCEP.

23 And I just wanted to make one final comment about
24 triclosan. And I just wanted to note again that I think
25 that chemical, because of the PPAR-alpha question and also

1 because of the widespread exposure in the human population
2 should be increased in priority. Again, the U.S. Centers
3 for Disease Control biomonitoring data has shown that in
4 the general U.S. population over 75 percent of us carry
5 residues of this chemical in our bodies. And we need to
6 have a better understanding of its toxic effects.

7 You guys are poised to make the expert decisions
8 and direct our OEHHA scientists to conduct a thorough
9 review of the literature that exist.

10 Thank you for your time.

11 CHAIRPERSON MACK: Thank you, Sarah.

12 Are you ready, Joe?

13 I'll start and then I just want to know if you
14 need a moment.

15 COMMITTEE MEMBER LANDOLPH: Yeah, sure I can do
16 it.

17 CHAIRPERSON MACK: Okay. I'll speak to the two
18 that I've been assigned.

19 The first one is fluoride. You can already tell
20 that I don't think I should change the prioritization, but
21 that does not by any means mean that I know what the
22 answer is going to be.

23 I just think because of the concern and because
24 of the widespread exposure, it's reasonable to review it
25 for the group.

1 The second one is molybdenum trioxide, which I
2 actually was convinced by Mr. Van Riper that it should be
3 downgraded from medium to low, on the basis of the low
4 prevalence of exposure.

5 So I'm changing my categorization of molybdenum
6 trioxide to low and keeping the categorization of fluoride
7 to high.

8 So who'd like to go next? Are you ready, Joe?

9 COMMITTEE MEMBER LANDOLPH: Yeah.

10 So the comments on aspartame, which I think Jay
11 and others have made. I struggled with this one. I mean,
12 when I said medium-low, I'm one of these people who likes
13 to use numbers. And I always split the categories. And
14 when I sit on study sections, I do the same thing.

15 So, I mean, the best I could do -- I agree with
16 all -- many of the comments that Jay made. And I know
17 there's a lot of criticisms of Ramazzini studies.
18 However, I've got to point out that before these guys who
19 did this study, there was Maltoni and they did studies
20 which were criticized on benzene, and they were absolutely
21 right. So I'm a little bit hesitant to throw data into
22 the hopper unless I'm sure.

23 So the best I could do is -- you know, I
24 struggled between medium and low, and so I would say to
25 OEHHA, and go against Joan's direct orders, place it at

1 the bottom of the medium category. I think that's about
2 the best I can do. I can't -- I don't want to change it
3 to low, because there's a lot of human use and I think it
4 should be looked at. I'm not wild about looking at it
5 immediately, but I still think it eventually should be
6 looked at. So that would be the best direction I could
7 give to you as an advisor.

8 What was the other one, Tom, was triclosan was
9 next?

10 And there was a request to upgrade that from some
11 very articulate comments from one of the speakers. And I
12 looked at that very carefully. I'm concerned about it,
13 because I teach microbiology and that's another whole
14 discussion. But there's no epidemiology studies. The
15 animal studies are negative in the rat, all the way up to
16 3,000 parts per million. They're negative in the hamster.
17 The studies in mouse gave positives in liver for males and
18 females. And that data was dose dependent for adenomas
19 for carcinomas and for combined.

20 Sorry, same problem again. Thank you.

21 And the EPA said it was not likely to be
22 carcinogenic to humans. Yes, there's a lot of human use.
23 And there was a lot of discussion about PPAR-alpha again.
24 And I struggled with this one. And I'm concerned about
25 the human use, but I'm just not overwhelmed by the

1 carcinogenicity data.

2 So I think I'm going to say thank you to the
3 speaker and, I respect your comments, but I'm going to
4 stick to my guns on this one. And if something changes,
5 we can always change it later, but I think I'm going to
6 stay there with a low rating on it.

7 And there was another one I had, which was
8 tris(1,3-dichloro-2-propyl) phosphate. There was a
9 question that we upgrade that from medium to high.

10 I looked at this pretty carefully. And, yes, I
11 went through the human use where there is homes, offices,
12 drapery exposure, et cetera. This one had no cancer
13 epidemiology studies at all. It did have very strong
14 animal carcinogenesis studies, which I liked, in a sense
15 that they were done well. And there were renal cortical
16 tumors in males and female and Sprague Dawley rats. There
17 were testicular tumors in males that was dose dependent.
18 Hepatocellular tumors and was dose dependent in females.
19 No genetox data and was not evaluated by IARC or EPA.

20 So I thought medium was -- I was comfortable with
21 a medium classification for this one. If there's more
22 data or something, then I'm happy to look at it.

23 But I was comfortable with my decision there. So
24 thank you for your elegant comments, but again I'm going
25 to stick to my guns. I do not feel compelled to move on

1 this one. And I think that was it for mine, is that
2 right?

3 CHAIRPERSON MACK: Okay. Anna didn't have any
4 that were commented upon.

5 COMMITTEE MEMBER LANDOLPH: Permethrin, Tom,
6 there was a comment.

7 Yeah, and that was mine too.

8 I have in my notes that there were malignant lung
9 tumors induced in the old early mice studies. I have to
10 go back and look at that again.

11 And there were -- most of the studies were benign
12 tumors, negative in a number of rat studies, negative in
13 the biomouse study. EPA says likely to be carcinogenic as
14 of 2002. And typical Type I pyrethroid insecticide. So
15 we know a lot about it.

16 And I think your request was to downgrade this
17 one. And I would say probably the best I could do on this
18 one, I think -- I do agree that most of the studies were
19 benign lung tumors. I was a little bit concerned that
20 benign tumors kept popping up over and over again, and
21 that one mention of malignant lung tumors, which I'll have
22 to go back to check.

23 I was certainly influenced by the EPA's panel
24 considering it. Likely to be carcinogenic to humans by
25 the oral route. That swayed me a lot.

1 So I think I'm going to stick to my guns on this
2 one too and thank you for your comments, but I think I'm
3 going to stick with medium on that one too.

4 CHAIRPERSON MACK: Okay. David.

5 COMMITTEE MEMBER EASTMOND: Let me just say, I
6 appreciate the public for their comments. And I think
7 they made -- for the two compounds that I'll be commenting
8 on, I think they made some really very valid points.

9 However, in my mind, you know, this sort of
10 screening level exercise is not possible to get into great
11 detail on the tumors and the types of tumors, and really
12 the relevance of those tumors, because if we do that,
13 we're doing the full assessment. So it's very hard to do
14 that.

15 My take on this is that while -- and particularly
16 this is with PFOA at this point. You know, there were
17 very good arguments made. And it's likely that in a full
18 screening of this, those arguments will come forward and
19 we would certainly evaluate that, and critically evaluate
20 them. And there's by no means certain that we would even
21 list this. But at a level of screening prioritization,
22 this is a compound that there's considerable concern
23 within the -- among the public. And it's one that there's
24 a lot of interest in.

25 So for me, that still tends to drive the thing.

1 There is evidence in animals. The animal data may be
2 shown to be not relevant to humans. But at this point in
3 time, we don't feel like we should be able to make that
4 decision. And we do know that there's considerable
5 concern among the public about this. Early on, we had
6 numerous organizations that tended to be more concerned
7 about -- environmental organizations or consumer
8 organizations, which were very concerned about this
9 compound.

10 So that in itself would suggest to me that I
11 would probably keep it at the higher priority. But that
12 doesn't mean it will be listed, because I think it just
13 means it ought to be evaluated in a more thorough basis.

14 With regards to the DINP, this one again the
15 gentleman from ExxonMobil made some very good points. And
16 the woman also from UCSF -- I'm not sure if -- made some
17 good ones.

18 You know, the fact that it's no longer used in
19 children's toys and that certainly the exposures are lower
20 than once thought. I guess the first thing is, if that,
21 in fact, is true, that would kind of shift my influence or
22 how -- the exposure on that.

23 But on the other hand, the woman from UCSF
24 mentioned that by looking at other metabolites, there's
25 actually widespread exposure in a sub-population, and

1 they're not sure how this is occurring. And so it
2 suggests that maybe there is exposure out there and
3 they're -- it just depends on what you're looking at and
4 how you target this.

5 The fact that EPA revised their concerns in 2005,
6 which was a comment made by the individual from
7 ExxonMobil, is also -- tends to kind of pull it down a
8 little bit in my mind. I don't -- I guess the real thing
9 for me comes down to the children's exposure, and are
10 there sub-populations that are exposed at fairly high
11 levels?

12 And I don't feel like I know enough to make a
13 really knowledgeable judgment at this point. So I guess
14 my inclination would be to pull it down in that, where I
15 had it before was between high and medium. And it's still
16 in that category.

17 So I guess that's what my thinking would be. Let
18 me just look at this really quickly.

19 MR. RAWSON: You didn't mention the -- my name is
20 Bill Rawson and I'm also with ExxonMobil.

21 You didn't mention the CHAP and I just would
22 appreciate if, in your comments, you would include that.
23 That specifically looked at the cancer issue and children,
24 if you will.

25 COMMITTEE MEMBER EASTMOND: Yeah, you might

1 define what CHAP refers to. That would help me as well.

2 MR. RAWSON: Sorry, last name is R-a-w-s-o-n,
3 William Rawson.

4 The Consumer Products Safety Commission convened
5 a Chronic Hazard Advisory Panel, and specifically looked
6 at the issue of cancer and exposure to children when DINP
7 was used in toys. That was the activity where a Senior
8 Scientist at OEHHA participated. And they concluded no
9 significant cancer risk to children. And I'm not trying
10 to re-argue the point. I just was hoping that in your
11 response to comments you would include that in your
12 thoughts.

13 So that specifically looked at that exposure in
14 cancer and children with products that would be put in the
15 mouth, and said no significant risk.

16 Thank you.

17 COMMITTEE MEMBER EASTMOND: Yeah. Lauren, do you
18 want to --

19 DR. ZEISE: Maybe I can speak to that, because I
20 was a scientist that served on the CHAP Committee. And I
21 think one thing that played heavily in the mind of the
22 Committee was the PPAR-alpha mechanism of action. And
23 that was before all of the most recent data have come in,
24 that would be looked at very carefully in a full review of
25 the compound.

1 As you noted, questions have been raised
2 regarding that mechanism of action for carcinogenesis.

3 COMMITTEE MEMBER EASTMOND: Just a comment. And
4 I didn't do the most thorough review on this, but you're
5 really looking at essentially liver tumors, which are
6 believed to be associated with this PPAR-alpha mode of
7 action, which is now being questioned.

8 You're looking at mononuclear cell leukemias,
9 which have a high spontaneous rate. But, again, as I
10 recall, in the EPA evaluation, they said this appears to
11 be independent of that spontaneous rate. They thought
12 there was dose relationships and that they occurred
13 earlier on than the spontaneous.

14 So they didn't think that explained the
15 mononuclear cell leukemias, and the renal tubular
16 carcinomas in the rats. Again, this may be this basically
17 alpha-2u mechanism. But from my experience, there are
18 like seven or eight criteria that IARC listed in order to
19 categorize something on that.

20 And although people say that these criteria have
21 been met, I'm not certain they have been met. And that's
22 where I think that the Committee would be wise to go
23 through them, point by point, if we really are going with
24 these mechanisms. That's something that would take a full
25 evaluation to determine.

1 So my inclination on this really is probably to
2 keep it where it is. Although, I would put it on the
3 lower level of the high priority.

4 CHAIRPERSON MACK: Are there any now that we
5 haven't addressed?

6 Has anybody addressed something that we haven't
7 responded to?

8 Then I guess we're finished with this process.

9 COMMITTEE MEMBER EASTMOND: Tom. Well, I guess
10 you've done that. But if others heard the same arguments,
11 they could weigh in, if they felt like it, I mean, among
12 the panel members.

13 CHAIRPERSON MACK: Let's do that.

14 Okay. Each of us has expressed whether or not
15 we're willing to change. The question is, do any of the
16 other panel members wish to comment on our responses?

17 COMMITTEE MEMBER HOPP: I agree with the current
18 changes after the public discussion.

19 I think we should accept them.

20 CHAIRPERSON MACK: Okay. I guess we've got our
21 prioritization, like it or leave it, like it or not.

22 We'll do the best we can each time it comes up --
23 we come up with a given tumor. And now it's going to be a
24 relief to just go back to the usual review of evidence on
25 a specific compound, rather than prioritization.

1 I thank you very, very much for your courtesy,
2 your thoughtfulness and your helpfulness, because this has
3 not been an easy process.

4 CHAIRPERSON MACK: All right. We'll resume at
5 1:30.

6 (Thereupon a lunch break was taken.)

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1 in many parts of the world, it is mixed with tobacco prior
2 to smoking, especially in North Africa and in Europe. And
3 that has implications for the epidemiology studies that
4 we'll see in a few minutes here.

5 --o0o--

6 DR. BEAUMONT: This slide or graph shows the
7 marijuana first-time use rates per thousand people per
8 year in the United States over the period 1965 to 1998.
9 And the main reason we want to show this slide is to show
10 when it first became popular, which was the late 1960's.
11 Just by chance I saw the film Woodstock last night.

12 (Laughter.)

13 DR. BEAUMONT: It was prevalent then.

14 (Laughter.)

15 DR. BEAUMONT: In the 1970's it plateaued and
16 since then it's had some ups and downs in popularity. But
17 basically, it has remained popular.

18 --o0o--

19 DR. BEAUMONT: I'll now turn to a discussion of
20 the human epidemiological studies. This slide is labeled
21 "Controlled Cancer Studies". Just to be clear, that we
22 are not including case reports, case series, review
23 articles that sort of thing. These are all controlled
24 epidemiological studies.

25 And we've identified a total of 26 such studies,

1 and often lack of privacy during interviews.

2 And I should say that almost all the studies are
3 case control studies, where oral interviews were the
4 method of collecting the data. And marijuana smoking has
5 been illegal in all the countries where the studies have
6 been done.

7 If the underreporting is equal in case control
8 studies, if it's equal in the cases and the controls, then
9 actually there's no bias. But if cases, for example,
10 underreport less, then healthy controls -- then that would
11 lead to a bias in the ratio estimates.

12 Another type of information bias is from the use
13 of proxy interviews. And this comes up in the studies of
14 parental smoking by fathers, where many of the fathers
15 didn't participate and the mothers answered the questions
16 for the fathers. And it's hard to say what direction the
17 bias might go if there was one. Another type of bias is
18 confounding bias from adding tobacco to marijuana. I
19 mentioned that earlier.

20 Also, many studies had low rates of participation
21 by subjects. And so there was potential for selection
22 bias. And then finally, cancers caused by exposures in
23 the environment usually have a latent period often over 20
24 years before the carcinogen is expressed. And some of the
25 studies had a relatively short observation period. And

1 I'll point those out.

2 --o0o--

3 DR. BEAUMONT: This next slide lists all of the
4 cancer categories that have been -- for which results for
5 marijuana smoking directly by humans have been reported.
6 So there's a total of 19 different cancer categories, for
7 which results have been reported. There's one category,
8 head and neck. By the way, these are in alphabetical
9 order. There's overlap with the head and neck cancer
10 category and several other categories. Otherwise, I think
11 there's little overlap.

12 Let's see. For each cancer category, at the end
13 in parentheses, is the number of studies that were -- they
14 found as significant, statistically significant
15 association over the number of studies that have been
16 done, that reported results.

17 Let's see. I'd like to point out that for 14 of
18 the 19 categories, only a single study has been published
19 so far. Let's see, for five of the categories, there has
20 been at least one statistically significant association
21 reported. And those are bolded and also the number of
22 studies positive is shown in red. So that studies for
23 which there's been at least one positive report have been
24 bladder, brain, head and neck, lung, and testes.

25 --o0o--

1 DR. BEAUMONT: I forgot to say, I'm now going to
2 talk about just those categories where there was at least
3 one significant association. And I'll do this in the
4 order of the number of studies. So the category that had
5 the most studies was lung cancer.

6 Oops, I somehow skipped. Let's see if I can go
7 back.

8 Sorry about that.

9 Six studies have reported results for marijuana
10 smoking and lung cancer. The first thing I'd like to
11 point out is the last column of example rate ratio
12 estimates -- by the way, some studies are case controlled,
13 some are cohort, but they're all trying to estimate the
14 rate ratio. So even they might have reported an odds
15 ratio, I've listed these all as rate ratio estimates.

16 The first thing you might notice is that the
17 results disagree from a ratio of as little as 0.6 up to a
18 high of 8.2.

19 The second thing I'd like to point out is that
20 three of the studies were conducted in northern Africa,
21 where it's common to mix tobacco and marijuana. And this
22 is acknowledged by the authors of those articles. And
23 that's the study in Tunis, one in Casablanca, Morocco.
24 And then a second study in Tunis, but done at a later time
25 period with different subjects.

1 And because those three northern African studies,
2 I think, are of questionable validity, to be nice, because
3 they mixed tobacco with their marijuana, I personally
4 dismiss them, and I'd like to focus on the other studies,
5 starting with Sidney 1997, was a prospective cohort study
6 in the bay area. It was actually members of the Kaiser
7 Permanente health plan who filled out a questionnaire.
8 And using an exposure classification of seven or more
9 joints ever in their lifetime, they reported results
10 separately for men and women. And they did not find
11 excess risk in either group.

12 A limitation of this study was it ended cancer
13 observation in 1993, which is approximately 25 years after
14 smoking became popular in the U.S. So it may have been
15 too short to observe cancer if there was a risk.

16 I'd like to skip down now to the Hashibe 2006
17 study. This was a registry based case control study in
18 Los Angeles county using population controls. And they
19 found in their highest exposure category of 60 plus joint
20 years -- and I'll stop to explain joint years. One joint
21 year is equivalent to smoking one joint per day, every day
22 for a year. So 60 plus joint years is substantial
23 exposure. And they found a rate ratio estimate of 0.6.

24 They also nicely looked at a subset of subjects
25 who were not smokers of tobacco. And in that subgroup

1 mixed, so that's good. The first study was a case control
2 study in a hospital in New York City by Zhang et al.
3 Using a definition of ever smoking marijuana, they found a
4 rate ratio of 2.6. A validity issue in that study was the
5 use of blood donors at the same hospital as the control
6 group.

7 And the authors of the study acknowledged that
8 blood donors may use marijuana more or less than the
9 general population.

10 The next study published was by Aldington again
11 in New Zealand. And this actually came from the same
12 study that reported lung cancer that we saw earlier. And,
13 in fact, it had the same control group. But for head and
14 neck cancer, they did not find a significant
15 association -- I show the results for ever smoking, even
16 in their highest exposure category, they also did not find
17 a significant association.

18 The next study by Gillison et al. was another
19 registry based case control study in Los Angeles county
20 using population controls. And this was a study that
21 focused on risk factors, in general, for head and neck
22 cancer, and within strata of human papilloma virus
23 negative and human papillomas -- I'm sorry, Type 16
24 positive. And HPV virus is a known cause of cancer. It
25 is classified by IARC as a carcinogen.

1 Well, they found among the HPV 16 Negative cases
2 an odds ratio of 2.0 that was not significant. But for
3 those subjects who were HPV 16 positive, that ratio was
4 statistically significant. And the authors speculated
5 there may have been some interaction. They could only
6 guess or speculate about causality between HPV 16 and
7 marijuana smoke.

8 And then the most recent study by Berthiller
9 combined or pooled data from case control studies in
10 Seattle, Tampa, Los Angeles, Houston, and seven cities in
11 Latin America, mostly in South America. Some were
12 registry based. Some were hospital based. At any rate,
13 overall for ever smoking marijuana, they reported an odds
14 ratio of 0.9, not significant.

15 Among subjects who hadn't smoked tobacco,
16 interestingly, still an odds ratio of 0.9. And then in a
17 subgroup, even smaller of non-tobacco and non-alcohol,
18 because alcohol is also a risk factor for head and neck
19 cancer, a slightly increased ratio of 1.1 that was not
20 significant.

21 In their highest exposure category of over five
22 joint years, they did not find overall an elevated odds
23 ratio. I hate to do this, but I'm going to back up to the
24 lung cancer slide for a moment, because -- see the
25 Berthiller -- Berthiller on this head and neck slide, they

1 also have since published another study on lung cancer.
2 And it was data pooled from three North African studies.
3 They used data -- Sasco 2002 data from Casablanca. They
4 used the Voirin 2006 data from Tunis. And then they had
5 data from a new study in Algeria, also in northern Africa.
6 And I discount this new pooled analysis again, because of
7 the mixing of tobacco and marijuana.

8 --o0o--

9 DR. BEAUMONT: Moving forward this time. This
10 slide shows results for three categories of cancer,
11 because they're smaller numbers of studies. So here we
12 have bladder cancer, brain cancer and testicular cancer.
13 Two studies reported results for bladder cancer. They
14 disagreed with each other. The first study was conducted
15 in Egypt, Northern Africa, but it did not find excess
16 risk.

17 The second study was conducted at Veteran's
18 Administration Hospitals in Palo Alto and Augusta,
19 Georgia. They did not report adjusted odds ratios. But
20 in a regression analysis, they did adjust for cigarette
21 smoking and other factors. They said the coefficient for
22 marijuana -- cumulative marijuana smoking was
23 statistically significant at the .01 level.

24 For the single study reporting results for brain
25 cancer, using the same cohort we talked about for lung

1 been few studies of each cancer type per category. But
2 almost all of them have had a significant association
3 reported.

4 Some things that are important to know about
5 these studies is -- one, is that they were all conducted
6 under the auspices of the National Cancer Institute funded
7 Children's Cancer Group. And they were similar in their
8 study designs. They were hospital based but used
9 population controls matched on phone area code. And they
10 all used telephone interviews of the parents.

11 Well, the next slide shows --

12 --o0o--

13 DR. BEAUMONT: -- the studies that reported
14 results for maternal marijuana smoking, and found a
15 significant association, the first by Robison et al. of
16 acute myeloid leukemia reported a 10-fold odds ratio, but
17 did not give a specific number. But they said that it was
18 significant at .005. And that was for having used
19 marijuana, smoking it five or more times in the year
20 before or during pregnancy.

21 The study by Bluhm et al. of neuroblastoma did
22 not find a significant risk overall for the 10 months
23 before birth. But in the first trimester, they did find a
24 significant association and odds ratio of 4.8.

25 And then finally the study rhabdomyosarcoma by

1 Grufferman et al. reported an increased risk 3.0 odds
2 ratio for ever use in the year before birth, by mothers.
3 Okay, that's for mothers.

4 --o0o--

5 DR. BEAUMONT: The next slide shows results for
6 smoking by fathers. And here we have five categories of
7 cancer, for which a significant association has been
8 reported. And the results -- the odds ratios are pretty
9 similar, ranging from 1.4 to 2.

10 Let's see, the first row for Wen 2000 reported
11 results for leukemia of all types combined, and reported
12 an odds ratio of 1.5 for children of all ages - I think it
13 was up to age 18 - for smoking ever by the fathers in the
14 year before the birth. They also did a separate analysis
15 for just the infant leukemia's. And that odds ratio was a
16 little higher at 2.0.

17 And then Wen et al. also reported an analysis for
18 the subgroup of acute lymphoblastic leukemias and using
19 the same exposure definition found an odds ratio that was
20 significant.

21 And then Trivers et al. in 2006 reported results
22 for acute myelogenous leukemia and found a barely
23 significant odds ratio of 1.4 for ever in smoking by the
24 father, regardless of time period.

25 Bluhm et al. in 2006 reported results for

1 or by the conversion of epithelial cells to
2 mesenchimatous.

3 --o0o--

4 DR. TOMAR: In these two skin-painting studies of
5 carcinogenicity as well as tumor promotional study, the
6 author compared the carcinogenicity of marijuana smoke
7 with the tobacco smoke.

8 In the carcinogenicity group, groups of 100 Swiss
9 mice were painted with 75 milligrams of tar on the back of
10 the skin three times per week for 74 weeks. The tumor
11 incidence was six out of 99 in the marijuana group as
12 compared to 14 out of 97 in the tobacco group.

13 While there was no concurrent control in this
14 experiment, the author indicated that in their laboratory
15 they rarely observed tumors in acetone-treated animals.
16 In the case of the tobacco, there were two carcinomas
17 besides the squamous cell papilloma.

18 The author indicated that in this experiment both
19 marijuana as well as tobacco smoke are considered
20 carcinogens.

21 In the case of the tumor promotion study, groups
22 of 60 Swiss mice were initiated with 75 micrograms of
23 dimethylbenz[a]-anthracene. After 10 days they were
24 painted with three times per week for 56 weeks with 75
25 milligrams of the tar. The tumor incidence in case of the

1 marijuana was 26 out of 60, which included the squamous
2 cell papilloma, carcinomas, as well as three fibrosarcoma.
3 In the case of the tobacco, there was squamous cell
4 papilloma and carcinoma only. There were 34 out of 60, as
5 compared to the initiated group alone, which has five out
6 of 60.

7 --o0o--

8 DR. TOMAR: Given the complexity of the marijuana
9 smoke, it is difficult to determine the precise mechanism
10 by which marijuana smoke induced cancers. However, based
11 on the study of marijuana smoke and what is known about
12 the individual components, the number of possible pathway
13 mechanisms can be envisioned.

14 Besides the similarity with tobacco and marijuana
15 smoke, as well as the similarity in the biological effect,
16 suggests that these two smoke components probably share
17 the common mechanism.

18 This figure indicates that five possible
19 mechanisms by which marijuana smoke may induce cancer.
20 Genotoxicity is likely the mechanism of action. As we
21 will show in the next few slides -- as we show in the next
22 few slides, marijuana smoke as well as the individual
23 components have been shown to cause chromosomal
24 abnormality as well as gene mutation.

25 Immunosuppression is a known cause for increased

1 smokers. We know that this increase from HIV to AIDS
2 related to the reduced T cells, again indicating the
3 reduced immunity in the presence of the marijuana smoke.

4 --o0o--

5 DR. TOMAR: Delta 9-THC is a potent
6 immunosuppressive agent. It reduces the thymus and the
7 spleen weight and cellularity. And it does so by binding
8 to the CB2-receptor and inducing apoptosis.

9 It disrupts the host resistance to microbial
10 infection; macrophage function; natural killer; and T cell
11 cytolytic activity; macrophage and T cell cytokine
12 production.

13 It needs to be noted that these all effects are
14 observed equally well in CB1 and CB2 mice, that suggest
15 that either there are receptors other than CB1 and CB2 or
16 there are various mechanisms by which the immune system
17 can be suppressed.

18 We also noted there increased viral hemagglutinin
19 titer and decreased macrophage and T helper cell and CD8
20 cytotoxic T cell count.

21 There are varied effects of marijuana smoke or
22 especially the Delta 9-THC on tumor induction. For
23 certain tumor types, there's an increase in the growth of
24 the tumors, especially the lung and the breast tumors.
25 For adults, especially leukemia, there is a decrease. But

1 this seems to be dependent on what are the mouse models,
2 especially in the wild-type mice, most of the cases
3 there's an increase. However, in case of the nude mice,
4 Delta 9-THC seems to suppress the tumor induction.

5 --o0o--

6 DR. TOMAR: There are inflammatory changes in the
7 lungs of marijuana smokers, inflammation, proliferation
8 and preneoplastic changes have been observed. Similar in
9 animal experimental models, dose-related inflammatory and
10 proliferative lesions. In dogs, bronchiolitis and
11 metaplasia. And in the monkey, inflammatory fibrosis and
12 metaplasia.

13 --o0o--

14 DR. TOMAR: In the mouse skin, there's an
15 increase in sebaceous gland metaplasia. It is similar to
16 the tobacco smoke. And this is a preneoplastic change
17 known to be converted to the tumors in case of the tobacco
18 smoke.

19 --o0o--

20 DR. TOMAR: Now, I'll pass it on to Dr. Hsieh.

21 DR. HSIEH: Okay. The effects on the endocrine
22 system.

23 Marijuana smoke and its components can impact
24 endocrine function through multiple pathways. Many of
25 these effects involve the hypothalamic-pituitary-gonadal

1 The chemical constituent in marijuana smoke
2 inhibit the binding of the dihydrotestosterone to the
3 androgen receptor. And the cannabinoid can affect
4 androgen metabolism in the testes as well.

5 Next one.

6 --o0o--

7 DR. HSIEH: This slide we are going to discuss
8 the comparison of marijuana smoke and tobacco smoke.
9 Marijuana smoke and tobacco smoke indeed share many
10 similar characteristics, such as:

11 The first one, the most chemical component that
12 we see in these two smoke are really similar, except
13 marijuana smoke contains cannabinoid and cannabinoid
14 derived product. And tobacco smoke contains only nicotine
15 and the nicotine-derived product.

16 The next one.

17 Similar particle size distributions for both
18 marijuana smoke and tobacco smoke.

19 The next one.

20 A study report found four times greater marijuana
21 smoke tar is deposited in the smoker's lung than tobacco
22 smoke tar is deposited in the smoker's lung, based on a
23 similar amount of plant material.

24 The next one.

25 There are 33 Proposition 65 listed carcinogens

1 present in both marijuana smoke and tobacco smoke.

2 The last one.

3 Both marijuana smoke and tobacco smoke induces
4 similar effects in mouse skin, both with regard to tumor
5 induction, tumor promotion and preneoplastic change. Both
6 induce mutations in Salmonella and both induce
7 inflammatory and preneoplastic changes in the lung of
8 smokers and in the dog lung as well.

9 The next one I'm going to pass the microphone to
10 Dr. Tomar and he will make the overall summary for today's
11 presentation.

12 --o0o--

13 DR. TOMAR: Thanks, Dr. Hsieh. Just to sum it
14 all up. There is evidence from some epidemiological
15 studies, which suggests that cancer is from direct and
16 parental marijuana smoking.

17 However, there are some limitations of the
18 epidemiological studies, which include the small number of
19 studies for most cancer types. And in certain studies
20 there is potential biases for mixing tobacco and
21 marijuana; differential underreporting of use between
22 cases and controls; low participation in some; and proxy
23 interviews in others.

24 --o0o--

25 DR. TOMAR: Marijuana smoke or its condensate

1 induce skin papillomas in mice, and malignant uterine and
2 mesenchymatous tumors as well as benign ovarian tumors in
3 rats. Marijuana smoke condensate exhibits tumor-promoting
4 activity in mouse skin, similar to that of tobacco smoke
5 condensate.

6 --o0o--

7 DR. TOMAR: Studies in smokers suggest that
8 marijuana smoke induces mutations and chromosomal
9 abnormalities. Marijuana smoke condensate induces
10 mutations in Salmonella, similar to tobacco smoke
11 condensate.

12 Marijuana smoke suppresses the multiple
13 parameters of immune functions.

14 Marijuana smoke affects multiple hormonal and
15 other cell signaling pathways, leading cells to potential
16 tumor transformation.

17 Marijuana smokers' lungs exhibit lesions similar
18 to those of the tobacco smokers, including inflammation,
19 proliferation and preneoplastic changes.

20 Marijuana smoke induces preneoplastic lesions in
21 mouse skin, similar to tobacco smoke.

22 And then marijuana smoke contains 33 of the same
23 carcinogenic constituents as found in the tobacco smoke.

24 Thank you very much.

25 CHAIRPERSON MACK: Thank you, Rajpal.

1 Now, we'll begin with the Committee's discussion
2 and we'll start with Anna.

3 COMMITTEE MEMBER WU: Okay.

4 CHAIRPERSON MACK: Start with a brief pause.

5 COMMITTEE MEMBER WU: Okay. I guess some of my
6 comments really pertain to the fact that I think the
7 summary from the scientists, I think, you know, describe
8 the limitations of the study.

9 Maybe before I actually go into the discussion of
10 the studies. I have some problems with the work of the
11 control studies, because I understand that these are
12 observational studies with controls. But I think that the
13 heading is a little bit misleading. And I think that they
14 sort of -- I understand what you're talking about, but I
15 think they're really case-control and cohort studies. And
16 there's really only one cohort study in the document.

17 But that's just a minor point. But that's just
18 sort of how they're being described.

19 I think the issues in terms of limitations of the
20 study, because of how issues of underreporting confounding
21 by various lifestyle factors, mostly alcohol. I think one
22 of the things that would be helpful and maybe that will be
23 a way of actually trying to compare the studies, is that
24 within the document you discuss how the different
25 assessments were varied, but -- and I think some of these

1 questionnaires actually were really limiting to people.
2 They already defined for them, as an example, that
3 exposure means that they have to smoke X amount. And so I
4 think the baseline group and also how they actually --
5 what is considered exposed would have been very helpful,
6 because I think one of the issues is really how much
7 underreporting -- cases and controls underreporting to
8 this same extent.

9 So I think if there's a way of summarizing, first
10 of all, what are the questions that were actually used in
11 these -- in these various studies. Second, that they
12 actually have a definition of what is exposed. And then
13 third, what is the baseline group for the comparison, so
14 that you can actually maybe have a better sense of what
15 are the potential under-estimations in terms of exposure.

16 And I think now that there is really a body of
17 literature in both the adult and childhood cancer, that
18 maybe you can actually see over time, we know what are the
19 cohort changes in terms of prevalence of marijuana use,
20 that you can actually get a sense of whether that's -- you
21 know, whether you can actually have some additional
22 insight to that.

23 And I think the second question or comment that I
24 have really relates to the issue of what percent of the
25 cases and controls in the various studies were

1 non-smokers. And I know throughout the document, there
2 was information on that. But I think it will be very
3 helpful, maybe there is an additional table, where you
4 could actually summarize if there were actually data on
5 non-smokers, so that you can actually see among the few
6 studies that actually analyze the data among the
7 non-smokers, what is the evidence.

8 And I think one of the other points I had was
9 most of the studies actually had information on various
10 levels of exposures. But it was not very clear to me how
11 many people actually analyze the data by "never", "former"
12 or "current" marijuana use. And what is "current"? Is it
13 as up to diagnosis date? I mean, is there some kind of
14 window that they were focusing on?

15 But I was really quite struck by the newer
16 studies in adult cancers where actually longer periods of
17 exposures are used. That the studies -- there tended to
18 be some additional positive studies. And that in the
19 studies on maternal and paternal use where the window of
20 exposure was really related to use within the year or a
21 different part of the pregnancy. That those studies were
22 fairly consistent, even though, you know, there are
23 well-acknowledged limitations in terms of the methods.

24 And I think that may, in fact, reflect the fact
25 that for the childhood cancers, it was less relevant

1 really when those studies were being done, since the
2 exposure period was very critical in terms of this
3 relationship to the childhood cancer.

4 So I think -- you know, I think there's certainly
5 a body of studies that are accumulating that are
6 suggestive.

7 CHAIRPERSON MACK: So you're coming down
8 basically on the side of thinking that there is a link
9 between some neoplasia in adults and children and past
10 exposure to marijuana?

11 COMMITTEE MEMBER WU: Yeah. I mean, I think with
12 the one cohort study that was done from Kaiser, the
13 studies -- there were like four, you know, the cites that
14 were considered, most of them actually were very
15 underpowered. So, you know, because of the fact that
16 there were very few cancers.

17 So even though it looked like there were many
18 cancers that were negative, it was really based on the
19 analysis from the Kaiser cohort study where the number of
20 cases were fairly limited.

21 CHAIRPERSON MACK: Marty.

22 COMMITTEE MEMBER HOPP: Unfortunately, I have a
23 lot to say.

24 First of all, I think regarding the epidemiology
25 studies. I think the basic problem with all these studies

1 is that the instrument that's being used to evaluate the
2 exposure of the interviewee is poor. It's a very -- it is
3 not an evidence-based instrument. And, in fact, the only
4 time when you tested this questionnaire against reality in
5 any of these studies was when they tested the
6 questionnaire in the Lozano study, where they looked at
7 the incidence of cannabis in meconium. And they evaluated
8 prenatal exposure by the presence of cannabis in meconium.

9 And they interviewed the mother for using these
10 instruments for exposure. And then they were able to
11 actually tell by tissue analysis whether or not she was
12 telling the truth.

13 And the numbers are four to one. There was four
14 times greater exposure in the tissue than the mothers were
15 willing to admit.

16 So that essentially the instruments that are
17 being used to evaluate exposure don't do what you want it
18 to do. If you ask patients -- if you ask people directly
19 face to face, they're not going to tell you the truth. If
20 you ask them, they may underreport they may overreport,
21 both for themselves and their spouse. And the same thing
22 happens in paper interviews.

23 This is very unusual for epidemiology studies,
24 because for the vast majority of these instruments they're
25 very reproducible. They're very documentable. When it

1 comes to marijuana, it's very clear that these instruments
2 are ineffective. And I think that's the -- that affects
3 your control use, because the controls -- when you're
4 going to do a statistical analysis, your controls have to
5 be zero. But if your controls really are not zero, then
6 you're unable to show a significant -- you're unable to
7 show a significant bias. You may have bias there, but
8 it's not shown, because your controls are actually not
9 zero anymore.

10 So it shows a lot -- throws a lot of this off.
11 That's my first comment.

12 Now, in order -- I'll shorten up my other
13 comments relative to -- I was asked to talk about
14 genotoxicity and carcinogenicity. And I think it's very
15 important that when you talk about marijuana smoke, to
16 differentiate the plant marijuana from the smoke. And
17 we're really here to discuss marijuana smoke and the
18 carcinogenicity of marijuana smoke. And that's different
19 than the product itself that's being sold as a plant.

20 The smoke itself contains a huge amount of
21 chemicals through pyrolysis, incomplete combustion, as
22 well as normal plant material, that is not necessarily
23 present in the plant itself.

24 And essentially what you mentioned is very
25 important. And that is that within the smoke condensate,

1 there are 33 chemicals that have been identified in the
2 smoke condensate that already are listed under Prop 65 as
3 being known carcinogens to humans.

4 Thirty-three of these are in common with tobacco
5 smoke. And their concentrations some times are higher and
6 sometimes are lower. However, to me the most important
7 factor here was benzo[a]pyrene; benzo[a]pyrene
8 concentration in marijuana smoke was four times that of
9 tobacco smoke. And we're asked here to determine
10 carcinogenicity for chemicals known to cause cancer in
11 humans. Of all the chemicals studied for lung cancer,
12 this one chemical benzo[a]pyrene is one of the few that
13 have specifically been shown to create the metabolic
14 activation that is distinctive to genotoxicity and to
15 affect the p53 gene as well as other codons.

16 In an article in Science that I pulled up by
17 Denissenko, which is not on your list here, basically
18 shows that the p53 human tumor suppressor gene in human
19 lung tissue at codons 157, 248 and 273 are the specific
20 spots that benzo[a]pyrene affects. And that the N2
21 position of guanine is the exact position that
22 benzo[a]pyrene affects the genome to cause cancer. It is
23 the specific carcinogen-based cancer-causing material.
24 And this is four times more common in marijuana smoke than
25 tobacco smoke.

1 I think all the other issues relative to
2 carcinogenicity are very common that you see amongst every
3 other carcinogen. If you consider a lump of tissue that
4 has 33 carcinogens in them, they're going to have an
5 extensive amount of chromosomal damage, all the toxicity
6 studies are essentially positive.

7 I think what concerns me most about the immune
8 studies is that of the decrease -- the effect of marijuana
9 smoke on the T cells and B cells and killer cells within
10 the body. Of all the things that you can really hurt
11 someone secondarily is that you can take away someone's
12 own defenses from other cancer-causing agents. And that's
13 what marijuana smoke has specifically been shown to do.

14 I think that the animal studies on toxicity and
15 painting are essentially similar to that of tobacco smoke.
16 I think it's very difficult to, at this time and age, to
17 be able to feed animals especially large animals, tobacco
18 smoke. Although, there are some studies that they
19 actually fed marijuana smoke through a tracheotomy sites
20 in dogs. And they developed lung changes very consistent
21 with preneoplastic changes.

22 Essentially, if you looked at our charge, that,
23 being that we need to identify chemicals that are known to
24 cause cancer, when I look at this, in summary, I see 33
25 chemicals that we already identify as causing cancer. And

1 some of the most nastiest ones are known to be directly
2 exposed to human cancers to be more consistent in
3 marijuana smoke condensate than tobacco smoke condensate.
4 And so I do strongly believe that tobacco -- this has been
5 very effectively shown to be carcinogenic and to contain
6 carcinogenic compounds known to us.

7 CHAIRPERSON MACK: Thank you, Marty. Does
8 anybody have any comments on either the epidemiology or
9 the animal studies or the short-term tests?

10 David.

11 COMMITTEE MEMBER EASTMOND: Sure. I guess, I
12 would agree if I were saying this is likely to be a
13 carcinogen. There's certainly all sorts of evidence that
14 it's likely to be one.

15 But what I weigh onto this is, has it been
16 clearly shown? And that's the issue. And if you go down
17 through this, I look at the human epidemiology study, it
18 really boils down largely -- the lung cancer, the one
19 study out of New Zealand, because all the other ones are
20 confounded by tobacco exposure, the other positive ones.

21 The paternal and maternal exposures for me strike
22 me as really peculiar. All of these have relative risks
23 between one and two, which means they're weak
24 associations. Every single one of them is in that range,
25 which I tend to think indicates recall bias. These are

1 very different types of cancers. So if they were all
2 leukemias or, you know, myeloid leukemias consistent
3 there. But you didn't see it with the other types of
4 neuroblastoma or something, you might think, okay, there's
5 a pattern here. But since they're all about the same
6 magnitude and they're on all different tumor types, that
7 suggests for me more of a recall bias, that's something
8 consistently -- that it's consistent with. And what you
9 were saying is that you can't really trust these
10 questionnaires very well at all.

11 So I don't have a real lot of confidence in that.
12 As far as the animal studies, again essentially two of
13 these studies, although they're probably carcinogenic,
14 they didn't have controls, concurrent controls at the same
15 time. So you get this real problem, these are older
16 studies. At the time, they didn't run concurrent
17 controls. These are elevated frequencies, but, you know,
18 when you come down to the definition as shown through
19 scientifically valid testing, according to generally
20 accepted principles. And then it's -- you have real
21 problems there.

22 Now, the one that did the inhalation, which you
23 would like to turn to, unfortunately gives a very poor
24 description. You can't even tell how many animals got the
25 tumors. It just says 50 percent.

1 So, again, these are, what I would consider to
2 be, quite weak studies from an experimental design and
3 description. And it's really almost amazing, considering
4 how prevalent this agent is and the usage, that there
5 haven't been any really good animal studies done on this,
6 particularly in light of this real problem with the
7 epidemiological studies.

8 So I have problems with it. I mean, perfectly
9 logical, I mean, you would expect -- it certainly has
10 carcinogenic agents in it. If I were predicting this
11 would be a carcinogen, I would certainly predict it. But
12 I come back to this idea, has it been clearly shown. And
13 that's where I run into problems according to the
14 scientifically valid testing. So I have some real
15 problems with it.

16 If I were predicting it or calling it or someone
17 came in for advice, I'd say this thing is going to be
18 carcinogenic for sure. But do we have evidence for it?
19 That's my --

20 CHAIRPERSON MACK: You mean, you wouldn't use it
21 yourself?

22 COMMITTEE MEMBER EASTMOND: Yeah, I wouldn't use
23 it.

24 CHAIRPERSON MACK: Joe.

25 COMMITTEE MEMBER LANDOLPH: Well, this -- I mean

1 it's very reminiscent of tobacco smoke, so I'm going to
2 disagree with some of the comments that were just made.

3 I mean, it causes mutations in Salmonella. It
4 causes mutations in lymphocytes at the hpgrt locus. There
5 was very good data that the State presented already on
6 disruption of the HPG axis, and you see ovarian and
7 uterine tumors. And it's got 33 carcinogens in it. And
8 these are not weak, like the stuff we were talking about
9 this morning. There's 4-aminobiphenyl; arsenic; benzene;
10 benzo[a]pyrene; fluoranthene, three isomers, benzofuran,
11 1,3-butadiene. There's Chromium VI. There's a
12 dibenz[a,h]anthracene, which is incredibly potent. And
13 then there are dibenzpyrenes, which are orders of
14 magnitude more active than benzpyrene. Then there are
15 metals, you know, chromium. There's nickel.

16 So there's a whole raft of carcinogens in here.
17 So I'm -- this is bad news. It's as bad as tobacco smoke
18 from its constituents.

19 And then in addition, you're getting genetox in
20 human tissues, you know, at the HPGRT locus. And I think
21 the epidemiology, yeah, there's conflicts in there and
22 confounders. But the head and neck data look pretty good.
23 Some of the lung data looked pretty good. So I'm fairly
24 convinced. I would certainly have no trouble voting on
25 this as a carcinogen.

1 I mean, I've been on this Committee many years
2 and we've looked at stuff which was an order of magnitude
3 weaker than this. So I have no trouble with this. I'm
4 going to vote in favor of it without any doubt in my mind.

5 COMMITTEE MEMBER WU: I want to make a couple
6 additional comments about the quality of the epidemiologic
7 data. And especially in relationship to the assessment of
8 exposure. I think that clearly -- I think if you look at
9 the prevalence of use among the controls in the various
10 studies, and now we're talking about various ages of the
11 adults, because the adult cancers covered various ages.

12 You go from studies that have about -- one to two
13 percent, up to five percent to the study in Los Angeles
14 where about 50 percent of the controls reported using
15 marijuana.

16 Very often, and I can't say all the time, but I
17 would say most of the time, when you have such varied
18 differences in terms of usage among controls, it is
19 because of the way the questionnaire is being phrased,
20 right. Now, we can never discount the issue of reporting
21 bias among cases and controls or the direction of the
22 reporting bias.

23 But if the question is structured in the way
24 that, in fact, the investigator is actually defining for
25 you what they would consider as an exposure, that would

1 also cause these types of variations. So that if you
2 actually tell the subject that I only considered being
3 exposed -- for example, for cigarette smoking, very often
4 the definition is having smoked one cigarette for at least
5 a year. So for marijuana, if their idea is have they ever
6 used marijuana versus have you ever smoked marijuana at
7 least one per month for a certain period of time, that
8 would definitely give you these very tight -- you know,
9 very varied exposure prevalences.

10 I'm not saying that these are not flawed
11 instruments. But I think the direction of the bias really
12 cannot be assessed. And I think that was one of the
13 reasons why I really recommended that if we go through the
14 instruments to actually -- and it was actually done in the
15 document, but actually saying what was actually defined by
16 the investigator as being exposed. Because ever exposed
17 really is very misleading, because ever exposed could mean
18 ever exposed meaning having just smoked one versus having
19 exposed, meaning that you smoked at least 30 for over, you
20 know, whatever it is.

21 So I think that will actually help clarify what
22 it means in terms of these very different prevalences of
23 exposure.

24 I think the table that will -- or the figure that
25 was presented very clearly showed changes of marijuana

1 prevalence in the U.S. And there are more detailed data
2 on prevalence of exposure by age. That information can be
3 related to the age cohorts of the people that were covered
4 in these case-control studies, so that you can actually
5 get an estimate of what is the extent of under or
6 overreporting among the control groups.

7 So that data is actually available, so that you
8 can actually look at -- because in -- the U.S. actually
9 has data by each state since 1960 by age group. The
10 percent that first started using marijuana -- I mean, that
11 they actually started you know, percent of initiation, as
12 well as prevalence of use.

13 So I think given that data, you can actually have
14 some estimate by geographic area of where the study was
15 actually being conducted, so that you can actually say is,
16 you know, what is the extent of misclassification. And I
17 think looking at that in the controls will actually give
18 you an idea of how flawed these are. So I think the
19 combination of actually knowing what the instrument --
20 what the investigator actually defined as being smoking
21 marijuana in his or her study, and then actually looking
22 at the data among the controls, I think will give you a
23 better sense of the adult assessment instrument.

24 Now, in terms of the assessment amount, the
25 mothers about pregnancy and, you know, what the father was

1 smoking around the partner's pregnancy. Granted that one
2 study from Spain showed that, in fact, there was a
3 four-fold difference between self-reporting and the
4 meconium analysis. The fact is those -- all the studies
5 in children's cancer were actually done using one
6 instrument. You can either say they were all flawed,
7 because most of those studies actually came from the U.S.,
8 from whatever the children's group is called.

9 So I think one of the things that actually would
10 be very helpful is to actually find out what other kinds
11 of medications or recreational drugs were actually asked
12 in those instruments, because there are things that you
13 can sort of say -- they're sort of, what do we call it,
14 dummy exposures, to see whether they were all up or all
15 down or whether they actually coexist with the marijuana
16 exposure, so that things that you really don't expect to
17 be associated, you can actually check it out.

18 And I think, given that that series of studies
19 were all done within the children's whatever, they had a
20 whole bunch of exposures that were asked. So I think for
21 the purpose of really trying to understand is this very
22 wide range of diseases or cancers that were covered, all
23 showed us 1.5 to two-fold increased risk is all due to
24 recall bias or is it because they are really telling you
25 something?

1 I don't know what the answer is.

2 I didn't actually think that every -- first of
3 all, 1.5 is not low. 1.5 is important if it is real. ETS
4 is 1.3, you know. And we take ETS very seriously. So I
5 wouldn't dismiss the 1.5 as being not important.

6 I think the more important thing is to find out
7 whether, in fact, this 1.5 is really because it is all
8 implicating something that is common. And I think given
9 that that series of studies, you know, were done in sort
10 of a very uniform way, in terms of the children's cancer
11 group, there may be an opportunity to find out what other
12 exposures that you wouldn't expect, and other exposures
13 that you would use with recreational drugs like marijuana,
14 and that might provide some insights.

15 CHAIRPERSON MACK: Sol.

16 COMMITTEE MEMBER HAMBURG: Anna, having heard all
17 that, and tried very difficultly to comprehend it, I don't
18 see that the human data is interpretable. We can go back.
19 We can reanalyze it. We can look at it a little bit
20 better, but the epidemiological data, I think, is not
21 helpful, at least for me, in determining whether marijuana
22 smoke is carcinogenic or not.

23 I think that Joe actually analyzed this very
24 appropriately. There are at least 33 known carcinogens
25 within marijuana smoke. The genetic data is relatively

1 strong. The mutational data is very strong. And I don't
2 see any problem with listing marijuana as a potential
3 carcinogen.

4 And I don't think we can use the epidemiological
5 data to either sway us one way or the other, because of
6 the difficulties in interpreting it and understanding
7 exactly what the information says.

8 CHAIRPERSON MACK: I wasn't actually planning on
9 voting because I was an author of one of the studies.

10 Yeah, I am on.

11 I said I wasn't planning on voting, because I was
12 one of the authors of one of the papers that she reviewed.
13 But the fact is that I agree with all of you. I'm sure we
14 all believe that marijuana smoke is a carcinogen. But I
15 agree with both Marty and Joe and Anna, that there are --
16 it's bound to be a carcinogen because there are 33
17 carcinogens in it.

18 But I also have to agree with David that it
19 hasn't been clearly shown. And the epidemiologic data,
20 including the study that I'm an author of, is very
21 difficult to interpret. And I wish that Anna's
22 suggestions had been available to the group before,
23 because I think that would have helped a lot. But I have
24 to say that I can't come down voting for listing right
25 now, because of the fact that it's not clearly shown, even

1 though I believe it to be true.

2 So are we coming to a vote now?

3 DIRECTOR DENTON: Okay.

4 CHIEF COUNSEL MONAHAN-CUMMINGS: No, you're not.

5 You haven't asked for public comment. I don't know if

6 anybody wants to comment, but you should ask for that.

7 CHAIRPERSON MACK: Are there any marijuana

8 advocates in the audience?

9 No. Of course, there may be people who have
10 useful things to say.

11 Anybody have any comments?

12 Chicken.

13 (Laughter.)

14 CHAIRPERSON MACK: Marty.

15 COMMITTEE MEMBER HOPP: That's better.

16 Two other comments with regards to the other
17 discussion. First of all, I think that when we discuss
18 chemicals for people in the State of California, I think
19 that we have to look at when this marijuana smoke is being
20 used, and how that can be interpreted towards safety with
21 the studies that we have.

22 In other words, it's one thing to discuss
23 marijuana smoke and the exposure of 33 carcinogens to
24 someone like myself who, knock on wood at this moment, is
25 fairly healthy. It's another thing to expose someone who

1 has no T cells, no B cells, no immune response whatsoever
2 because they're undergoing chemotherapy for breast cancer
3 or ovarian cancer.

4 These patients have no inborn resistance to
5 anything. And I think that they're asking us and this
6 committee is, are they being exposed to a carcinogen to
7 which they have absolutely no defenses, if they smoke
8 marijuana while they're in this medical condition?

9 And I think that question is very apropos to the
10 data we have. That's different than the epidemiology data
11 that we have. That's the question that goes back to the
12 carcinogenicity within this chemical. This is not
13 epidemiology. This is carcinogenicity. And to these
14 patients who have absolutely no resistance, I think that
15 the carcinogenicity studies that we show here are very
16 dangerous to these people. And I think it is carcinogenic
17 to these people.

18 Just a second.

19 CHAIRPERSON MACK: I think you're right, of
20 course, that if a physician is giving advice to a patient
21 with cancer, who is considering taking medical marijuana,
22 you have every reason to give that advice in the way that
23 you say.

24 COMMITTEE MEMBER HOPP: No. No. The point I'm
25 getting at is that I think that this is carcinogenic to

1 those people.

2 CHAIRPERSON MACK: That's right and that's why
3 you give that advice. But the difficulty is that legally
4 that's not the task we've been given, as I understand it.
5 The task we've been given is deciding whether or not, as
6 scientific experts, we can say that marijuana smoke has
7 clearly been shown to cause cancer.

8 Now, as far as I'm concerned, the closest way
9 that I can get to that is the animal studies. But you
10 guys have described them and have not lauded them in any
11 great way. And I have difficulty then being able to say
12 that it causes cancer in animals from the way you've
13 described the studies.

14 And I agree with your criticisms of the
15 epidemiologic studies. And I also agree with Anna, that
16 if we knew exactly what was going on in the controls to be
17 able to evaluate the biases present in the case
18 assessments, it would help, but we don't have that right
19 now.

20 COMMITTEE MEMBER HOPP: No, but what we do have
21 is we've taken this condensate of a group of chemicals and
22 shown that the individual chemicals within that group are
23 carcinogenic. And it's hard for me to understand how you
24 could say that each individual chemical is carcinogenic,
25 but when you put it together, it's not.

1 CHAIRPERSON MACK: Well, suppose that they
2 counteract each other.

3 No, of course, I believe they do. But again, you
4 know, if what you say is true, we shouldn't be given the
5 task of judging marijuana smoke, because it would already
6 have been listed by default, because there are 33
7 chemicals that are carcinogens within it.

8 COMMITTEE MEMBER HOPP: Which is my point, I
9 don't know why it hasn't been.

10 CHAIRPERSON MACK: But we were given the task.

11 COMMITTEE MEMBER HOPP: Because by default, it
12 should have been.

13 CHAIRPERSON MACK: I either need some advice from
14 Carol or from somebody down there at that bench.

15 DR. SANDY: This is Martha Sandy.

16 I'll just say that under Proposition 65, we can't
17 put marijuana smoke on the list, because it contains 35
18 other chemicals listed on Prop 65. That's why it's coming
19 to you. You have to -- you're being asked about the
20 mixture marijuana smoke, has it been clearly shown?

21 CHAIRPERSON MACK: Let me ask you, how did it get
22 to your list?

23 DR. SANDY: We performed the human data screen
24 under our prioritization process of 2004. And there were
25 human data. We brought it to your committee for

1 prioritization and you recommended that we prepare a
2 hazard identification document.

3 CHAIRPERSON MACK: So if you'd had sweet pea
4 smoke, it would have been there too?

5 (Laughter.)

6 DR. SANDY: I don't know that we have human data
7 on that.

8 CHIEF COUNSEL MONAHAN-CUMMINGS: Dr. Mack, I
9 think that -- this is Carol Monahan-Cummings.

10 I think that you're correct that the charge to
11 the Committee is to -- you are correct, that you have to
12 look at marijuana smoke as a mixture or a compound,
13 however you look at it, is it -- has it been clearly shown
14 by scientifically-valid testing to cause cancer?

15 But I don't think you can exclude your knowledge
16 of the fact that these other constituents of that compound
17 have been shown to cause cancer. I don't think you want
18 to separate those two things from each other, because
19 you're talking about the compound. So I think you might
20 be restricting yourself more than you need to, in terms of
21 looking at it. If you were looking at one of the
22 individual chemicals, then you would want to look at one
23 of the individual chemicals, but you're actually looking
24 at the smoke as a compound.

25 And so I don't know why you would exclude your

1 knowledge of the other parts of that compound. We're not
2 asking you to find that any particular part of that is
3 causing cancer. We're asking it as a whole, do you
4 believe it causes cancer?

5 CHAIRPERSON MACK: So your boss would be quite
6 happy if I simply changed the word to it can be clearly
7 "presumed".

8 CHIEF COUNSEL MONAHAN-CUMMINGS: No, I'm not
9 saying "presumed". And I'm not speaking for the
10 administration. I'm just saying in terms of consideration
11 of a mixture like this, I don't think that you have to say
12 that the mixture itself has been tested. And I can only
13 look at that data. If it's a mixture that contains a
14 number of other compounds that you've already listed and
15 you know are carcinogens then you can take that into
16 account.

17 CHAIRPERSON MACK: This is very difficult,
18 because I can't imagine circumstances where a mixture
19 would not have the cumulative effect of its components.
20 That there easily can be things which counteract each
21 other in a mixture. I have no reason in the world to
22 think any of these would do that. So it becomes
23 difficult. And if I were to say -- myself, if I were to
24 say that it has been clearly shown, I can't.

25 CHIEF COUNSEL MONAHAN-CUMMINGS: And that's

1 certainly appropriate. That's your scientific judgment
2 based on that information.

3 CHAIRPERSON MACK: We need to make that decision.
4 And so I think we might as well go to a vote.

5 COMMITTEE MEMBER LANDOLPH: Yeah, one comment
6 before we vote.

7 I think in this it's important to realize some
8 historical lessons. And the historical lesson I would
9 point out is that there are very eerie parallels between
10 cigarette smoking and marijuana smoking. As Anna already
11 pointed and I helped review the ETS document of the State,
12 those numbers are small, but they're similar. They have
13 33 of the same notorious carcinogens in them.

14 When people first started working with tobacco
15 smoke, it was difficult to induce tumors in animals. They
16 tried by inhalation. It didn't work. So they extracted
17 it. They painted it on the skin and it did work, like it
18 did work here.

19 And the epidemiology data has flaws in it,
20 granted. But there's a lot of increased incidences at
21 many different organ sites. And the latest Surgeon
22 General's report on tobacco, about a year ago, indicates
23 it effects eight or nine different organs. So I see a lot
24 of parallels between the two.

25 CHAIRPERSON MACK: Well, I think what you said a

1 minute ago is the more compelling thing. You said, it did
2 work when you put it on the skin of the mouse.

3 COMMITTEE MEMBER LANDOLPH: Yeah, and so does
4 marijuana smoke.

5 CHAIRPERSON MACK: I'm asking about marijuana
6 smoke, not tobacco smoke. I'm saying how good is the data
7 that says it does work producing carcinomas when placed on
8 the skin of a mouse, and under what circumstance?

9 COMMITTEE MEMBER LANDOLPH: Well, that animal
10 study was a positive study, looking at painting it on the
11 backs of mouse and getting skin tumors, so that was
12 positive. It's good enough.

13 CHAIRPERSON MACK: Well, that's the basis on
14 which I would decide positively then, because if it causes
15 cancer in the mouse, it causes cancer.

16 COMMITTEE MEMBER LANDOLPH: Yeah, and of course,
17 you know the skin tumor story is complicated, because
18 first you get papillomas, and a certain fraction, about
19 eight percent, convert into carcinomas.

20 CHAIRPERSON MACK: But again, it depends on
21 whether it was controlled. In other words, whether there
22 was -- everything was done to the skin of the control
23 mouse except for marijuana smoke.

24 COMMITTEE MEMBER LANDOLPH: Yeah, I wasn't the
25 primary reviewer, so I didn't pull that original study.

1 Better ask the primary reviewer that question.

2 CHAIRPERSON MACK: What do you think of that,
3 Marty?

4 COMMITTEE MEMBER HOPP: The controls on that were
5 extensive as I recall, because they were the ones who had
6 basic acetone, and all source of solvents, all the
7 different parts, except for the condensate tested that
8 were all negative. And so there were a whole bunch of
9 several controls to try to eliminate every single part of
10 the solvent, compound, irritant and everything else that
11 might have been focused on.

12 CHAIRPERSON MACK: Okay, if true, that's good
13 enough for me.

14 DR. SANDY: If I could clarify, though.

15 CHAIRPERSON MACK: Please.

16 DR. SANDY: If you're speaking about the Hoffman
17 et al. study, for the bioassay, they did not have
18 concurrent controls. They reported historical controls
19 that had been exposed to the vehicle, which is acetone.
20 And they said the skin tumors in historical controls were
21 very rare. They used the term "very rare", which is
22 usually implying less than one percent incidence. They
23 did have -- in that same paper, they were reported that
24 skin initiation promotion study, where they did have an
25 initiator control group. And you see that both the

1 tobacco smoke condensate and the marijuana smoke
2 condensate, when applied after the initiator as a
3 promoter, did increase skin tumors. And you had an
4 initiator alone control group there.

5 CHAIRPERSON MACK: All right. I think we should
6 go to a vote, and we'll see what happens.

7 Has marijuana smoke been clearly shown, through
8 scientifically-valid testing, according to generally
9 accepted principles to cause cancer?

10 Everybody answering yes to that question, raise
11 their hand?

12 (Hands raised.)

13 CHAIRPERSON MACK: All right. I bought it.

14 I record five yeses.

15 And everyone who says no raise there hand?

16 (Hand raised.)

17 CHAIRPERSON MACK: One no.

18 That means that marijuana smoke will be listed.

19 I feel like a turncoat.

20 (Laughter.)

21 CHAIRPERSON MACK: Ms. Oshita.

22 MS. OSHITA: Good afternoon. As you're aware,
23 your committee last met November 2008. And in a break
24 from tradition, we've called you all back here in just a
25 short six months. And in that time, there still remain

1 two chemicals that we mentioned at the last meeting. They
2 are for 4-methylimidazole and methanol, which are under
3 consideration for administrative listing. Each chemical
4 has now progressed to the Notice of Intent to the List
5 Phase. And the public comment period for
6 4-methylimidazole will close today May 29th. We have
7 received comments on methanol already and they will be
8 reviewed.

9 In addition, in December of 2008, OEHHA announced
10 the possible listing of four other chemicals and they
11 include carbaryl, metam potassium, metofluthrin, and
12 spirodiclofen as chemicals known to the State to cause
13 cancer. There were comments received on each of those
14 chemicals and those are under review as well.

15 And then lastly, since November, no significant
16 risk levels have been adopted for ethylbenzene. They were
17 54 micrograms per day via inhalation, and 41 micrograms
18 per day via oral route. And these levels became effective
19 May 7th, 2009.

20 Thank you.

21 CHAIRPERSON MACK: Thank you, Cindy.

22 Is there any other business?

23 George.

24 DR. ALEXEEFF: George Alexeeff here. First, I
25 just want to thank the panel members for today's work.

1 But I just did want to give you a little information about
2 the screening.

3 So today's screening of 38 chemicals represented
4 our screening of half of the database. So we're hoping in
5 November or December -- well, we're shooting for November,
6 to provide you the rest of the screened chemicals. That's
7 our current plan.

8 CHIEF COUNSEL MONAHAN-CUMMINGS: This is Carol
9 Monahan-Cummings. I just want to give you a quick update
10 on litigation related to Prop 65. I'm sure you're very
11 aware of some of it. But in terms of cases that went to
12 the court of appeal, we had a decision from the court in
13 the Exxon versus Denton case that you may recall. It had
14 to do with the listing of DIDP as a reproductive toxicant.

15 The trial court had ruled that we properly listed
16 that under the authoritative body listing mechanism. And
17 the court of appeal agreed and so the chemical remains
18 listed.

19 The other litigation that's currently pending in
20 the trial court is the Sierra Club versus Schwarzenegger
21 case, which you're all parties to. And that case is
22 currently in the discovery phase. There has been a
23 document production request, as you know. And we've also
24 had one deposition that was started. There's a couple
25 more in the works. And there's a motion next month on the

1 11th for a protective order for some of the information
2 that's being requested by the Sierra Club.

3 Some related litigation that I don't think that
4 you knew about or was filed very late in the year last
5 year, was filed by the Chamber of Commerce against the
6 Governor and others. And that case was filed in San Diego
7 county, but was transferred to Alameda county and
8 consolidated with the Sierra Club case.

9 And that case is only focused on the Labor Code
10 listing process, which you all are not apart of. But
11 there is a provision in the law that requires OEHHA to
12 list chemicals that are identified by reference to certain
13 Labor Code provisions, which also reference some federal
14 regulations under the Federal Hazard Communications
15 Standard.

16 That litigation, even though it's consolidated,
17 is proceeding much quicker than the Sierra Club case. And
18 we recently had rulings in that case on April the 16th and
19 just this last Wednesday on the 27th. And in both of
20 those, OEHHA and the Administration were successful in
21 arguing that we do have an ongoing duty to list those
22 chemicals, in terms of our interpretation of which lists
23 we need to refer to.

24 We do expect the Chamber of Commerce to appeal
25 those cases. They've indicated they most likely will --

1 or those decisions. And so that part of the case will go
2 up on appeal. And the Sierra Club case will continue, but
3 not on those two questions.

4 Does anybody have questions on these?

5 COMMITTEE MEMBER EASTMOND: I have a question.
6 It's more general. But during the time we serve on this
7 Committee, we're actually appointed as State employees.
8 And I thought one of the reasons for that was so that we
9 would not -- we could not be sued individually, and yet in
10 this one case that's going forward, we are listed. Now,
11 can you explain what the situation is or what's going on.

12 CHIEF COUNSEL MONAHAN-CUMMINGS: Yes. You are
13 actually being sued as members of the Committee in your
14 official capacity as members of the Committee, so you're
15 not individually being sued in the same way. You're not
16 going to be personally liable for anything that is decided
17 by the court. But you are being sued as members of this
18 State committee.

19 And so I would anticipate, at most, that would
20 mean that the court could order you to take some action or
21 not take some action that the Sierra Club is requesting.

22 COMMITTEE MEMBER LANDOLPH: Yes. That case
23 against the Governor and OEHHA and the CIC involve PFOA
24 and PFOS, I believe.

25 CHIEF COUNSEL MONAHAN-CUMMINGS: Yes, it does.

1 COMMITTEE MEMBER LANDOLPH: So should we keep the
2 current PFOA data from the prioritization in our files or
3 should we forward that to you or what do you want to do
4 about that?

5 CHIEF COUNSEL MONAHAN-CUMMINGS: Well, I don't
6 necessarily want to put attorney-client advice on the
7 record, so I'll speak with you after that.

8 (Laughter.)

9 COMMITTEE MEMBER LANDOLPH: Good enough.

10 DIRECTOR DENTON: Okay. I'll give a quick
11 summary of today's actions of the Committee.

12 Regarding the prioritization of the 38 chemicals
13 which we brought to you today, you gave us the following
14 advice: Nine of these chemicals were put in the
15 high-priority category, with the one caveat, depending
16 upon the exposure considerations for DINP, put it towards
17 the bottom.

18 Thirteen chemicals were put in the medium
19 category. Aspartame, it was recommended that that go at
20 the bottom of the medium priority range. And then 16 --
21 the remaining 16 chemicals were put in the low priority
22 with no chemicals being in the no priority.

23 And then just a few minutes ago, the Committee
24 voted five to one to list marijuana smoke as a chemical
25 known to the State to cause cancer.

1 So those are the activities that the Committee
2 undertook today.

3 I would personally, as one of the individuals
4 who's named on these lawsuits, I would personally like to
5 thank the Committee today for their work. It's always an
6 honor to be part of this work. And you always do the
7 Governor and the State really proud with the work and the
8 consideration that you give these issues that we bring
9 before you.

10 And I'd also like to give a special thanks to
11 OEHHA staff, to George, to Lauren, to Martha, to Jay,
12 Jennifer, Rajpal, to all of the group that's sitting in
13 the audience who have done such a great amount of
14 preparation for this committee, and I think allowed it to
15 go as smoothly as it did. So I'd like to really extend my
16 thanks as well to Carol and George.

17 So with that, I don't know if any of the
18 Committee had any other comments or I'll turn it back to
19 you, Tom.

20 CHAIRPERSON MACK: I just want to second that,
21 especially thank Martha and the group for responding to
22 requests at the last minute. It was very helpful.

23 COMMITTEE MEMBER HOPP: I'd also like to second
24 that. Martha has been very helpful and the rest of the
25 staff has been very helpful in getting these articles and

1 organizing this. And I appreciate it.

2 COMMITTEE MEMBER EASTMOND: I'd like to thank
3 whoever is using the photocopier, because they really got
4 a workout.

5 CHAIRPERSON MACK: Nobody can say we're all in
6 the same boat, all in the same -- we're not coming from
7 the same place. We're all from different places.

8 DIRECTOR DENTON: I think we also have to thank
9 Cindy Oshita and Sue Luong who spent many hours doing just
10 that. And to the members of the audience who participated
11 again too.

12 I guess with that, we're adjourned. So thank you
13 very much.

14 (Thereupon the Carcinogen Identification
15 Committee adjourned at 3:31 p.m.)

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1 CERTIFICATE OF REPORTER

2 I, JAMES F. PETERS, a Certified Shorthand
3 Reporter of the State of California, and Registered
4 Professional Reporter, do hereby certify:

5 That I am a disinterested person herein; that the
6 foregoing California Office of Environmental Health Hazard
7 Assessment, Carcinogen Identification Committee was
8 reported in shorthand by me, James F. Peters, a Certified
9 Shorthand Reporter of the State of California, and
10 thereafter transcribed under my direction, by
11 computer-assisted transcription;

12 I further certify that I am not of counsel or
13 attorney for any of the parties to said workshop nor in
14 any way interested in the outcome of said workshop.

15 IN WITNESS WHEREOF, I have hereunto set my hand
16 this 11th day of June, 2009.

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