

DAVID OTIS WILSON AND

DEBRA B. WILSON,

Plaintiffs,

vs.

THE ROE CHEMICAL COMPANY,

Defendant.

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TRANSCRIPTION OF SWORN DEPOSITION

DANIEL BAKER TOWE, PH.D.

DECEMBER 20

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Q. Dr. Towe, would you state your full name, please.

A. Dr. Daniel Baker Towe.

Q. Who is your employer?

A. Roe Chemical, working in the toxicology department, for five years.

Q. Would you give us a little bit of your educational background.

A. Four years of undergraduate study in the field of biology, four years of graduate study in toxicology.

Q. Do you have a doctorate in toxicology?

A. Ph.D.

Q. In your employment with the toxicology department with Roe Chemical, what is your main job?

A. I'm head of the department.

Q. Just what do you do?

A. I run experiments on design chemicals and recommend what should be put on labels.

Q. Are you familiar with the product Pre-merge Dinitro?

A. Yes. Through the experiments which I conducted at the labs here at Roe. We ran a series of several tests on different compounds for

1 alkyldinitro phenols. We ran a series of tests on
2 three different lab animals, including rats, mice,
3 and rabbits. We then published those results in an
4 article I co-authored.

5 Q. What was the purpose of the tests?

6 A. The purpose of the test was to find out the
7 toxic effects in relation to how it would affect man
8 or how it would affect these animals, and to help
9 write the warning labels.

10 Q. What different compounds did you test?

11 A. The different compounds of dinitrophenol
12 that are structurally similar. We experimented with
13 five of the chemicals: 2,4- dinitrophenol; 4, 6-
14 dinitro-o-cresol; 2-sec butyl 4,6- dinitrophenol; 2-
15 cyclohexyl 4,6-dinitrophenol; 2-cyclohexyl 4,6-
16 dinitrophenol compound with dicyclohexylamine.

17 Q. Would you go into a little more detail on
18 the tests that you performed and give us the results
19 of some of the tests on the different lab animals?

20 A. The first experiment we did was on rabbits.
21 Each chemical was tested on 20 rabbits. We exposed
22 four groups of five rabbits to a different
23 concentration. We also had five controls that were
24 dosed with saline. We found no statistically
25 significant differences between the exposed rabbits

1 and the control rabbits. This suggested that skin
2 exposure to Dinitro would not produce harmful
3 effects in humans.

4 Q. Were there any differences regardless of
5 whether they were statistically significant?

6 A. Rabbits in three of the test groups
7 exhibited symptoms consistent with a fever.

8 Q. Were any of those chemicals that produced
9 this result 2-sec butyl 4,6-dinitrophenol?

10 A. Yes.

11 Q. What was the concentration of the Dinitro
12 that produced the symptoms?

13 A. The rabbits reacted only to the highest
14 concentration. The highest concentration was
15 undiluted Dinitro.

16 Q. Was there any reason for using rabbits?

17 A. Yes. An animal is selected on the basis of
18 its similar physiological comparative anatomy to
19 man, and that's why we chose rabbits.

20 Q. There were two other lab animals that you
21 mentioned, laboratory rats and mice, correct?

22 A. Yes.

23 Q. Would you explain the testing on those
24 animals and the results?

25 A. The skin absorption testing on the rats was

1 done in the same manner as the rabbits. We also did
2 two other experiments to determine the effects from
3 ingestion. We created 5 groups of 20 rats. Each
4 group was fed one of the 5 chemicals we tested; 4
5 rats in each group of 20 were fed a single dose of
6 varying concentration. We also had 5 controls. The
7 other experiment involved oral daily dosing 100 rats
8 over a 6-month period with each of 5 groups being
9 fed one of the chemicals.

10 Q. Was 2-sec butyl 4,6-dinitrophenol tested
11 for six months?

12 A. Yes.

13 Q. What results did you get in your single
14 dose experiment?

15 A. Some of the rats getting the highest dose
16 developed high fevers. We found this reaction in
17 response to three of the chemicals. One rat out of
18 the 100 that we tested in the single dose experiment
19 died at the highest dose.

20 Q. What chemical was fed to the rat that died?

21 A. The chemical was fed to the rats in their
22 water and mixed with their food. The total daily
23 amount fed to the rats was equal to .01 percent, .10
24 percent, 1 percent or 5 percent of their body
25 weight. The average weight of the rats was 400

1 grams.

2 Q. What results did you find in the chronic
3 testing?

4 A. Some rats at the two highest doses
5 developed what appeared to be neurological deficits.
6 However, the frequency of this result was only
7 marginally statistically significant.

8 Q. Based upon the tests and the results, did
9 you conclude that any of the compounds had any toxic
10 effect in the rats?

11 A. Yes. The skin testing produced some
12 pyretic effects. The one death from the single oral
13 dose was not a statistically significant result.
14 Only six rats died in the chronic testing.

15 Q. And what caused the pyretic effect that you
16 mentioned?

17 A. The mechanism that caused the pyretic
18 effect is not understood completely.

19 Q. Which chemicals produced the reactions
20 you've mentioned?

21 A. 2-sec butyl 4,6-dinitrophenol, 4,6-dinitro-
22 o-cresol, and 2,4- dinitrophenol.

23 Q. So three out of the five compounds had some
24 toxicity, and Dinitro had a fatal effect in one rat
25 in the single dose experiment and killed two rats in

1 three of the five groups tested?

2 A. Yes.

3 Q. Are 4,6-dinitro-o-cresol and 2,4-
4 dinitrophenol structurally similar to 2-sec butyl
5 4,6- dinitrophenol?

6 A. Yes.

7 Q. Describe the testing that was done on the
8 mice.

9 A. The mice were tested in much the same way
10 as the rats except the long-term studies ran
11 eighteen months. That was pretty much a lifetime
12 study for mice.

13 Q. What results did you see in the testing
14 that was done with skin application?

15 A. The mice had slightly greater toxic
16 reactions to the chemicals than rats and rabbits.
17 More mice developed fevers at lower concentrations
18 with the skin absorption than the rats. In
19 addition, two of the mice died from the skin
20 absorption study done with Dinitro (2-sec butyl4,6-
21 dinitrophenol).

22 Q. What results were seen in the single oral
23 dose testing?

24 A. Five of the mice fed the two highest
25 concentrations of Dinitro died within seven days of

1 being dosed.

2 Q. This means that 50 percent of the mice fed
3 the two highest quantities of Dinitro died?

4 A. Yes.

5 Q. What results did you achieve with the
6 chronic feeding study in the mice?

7 A. Among the one hundred exposed mice, we were
8 surprised to find two that died from liver cancer.
9 We had not seen this in the rats. Approximately 20
10 percent of the mice exposed to Dinitro became
11 ataxic. Some of those had begun to drag their hind
12 legs before they were sacrificed and autopsied.

13 Q. What were the findings on autopsy?

14 A. Some of the animals exhibited muscle
15 wasting and loss of nerve axons.

16 Q. Were any of the rabbits or rats autopsied?

17 A. No.

18 Q. How much was fed to the mice that became
19 ataxic?

20 A. Mice exhibiting this symptom had received
21 the three highest concentrations.

22 Q. What is the average weight of the mice that
23 were used?

24 A. Approximately thirty grams.

25 Q. Of the three compounds that you described

1 had a toxic effect, which, in your opinion, was the
2 most toxic?

3 A. 2-sec butyl 4,6-dinitrophenol. It proved
4 to be the most toxic when applied both to the skin
5 and by ingestion.

6 Q. Going back to the skin absorption studies
7 for a moment, how long was the chemical allowed to
8 stay on the skin of the animals?

9 A. We followed the animals for two weeks after
10 the single application. That excludes, of course,
11 the few that died within two weeks of the chemical
12 being applied to the skin.

13 Q. What precautions were taken by the lab
14 technicians to prevent any contact with these
15 compounds?

16 A. The only precautions taken to handle the
17 chemicals were extreme care, plus gloves, of course.

18 Q. You didn't handle these chemicals under a
19 hood or in an enclosed environment?

20 A. No.

21 Q. Your chemists are trained to be safe and
22 careful in handling dangerous chemicals, aren't
23 they?

24 A. Yes.

25 Q. So it was your opinion that there was no

1 danger to the lab technicians as long as they
2 handled the compounds with care?

3 A. Yes, and wore gloves.

4 Q. And there was no reason to worry about any
5 type of accident, any type of spill of the
6 compounds?

7 A. No. Even a spill of the compounds on the
8 skin would not have caused any reaction from the
9 body. All that needed to be done was immediate
10 washing. That's what we put on the label.

11 Q. Did you see any reason to put directions on
12 the label about how a person should pour or get the
13 chemicals out of the container?

14 A. No. I was only interested in the effect of
15 the compounds, which were safe when properly used.

16 Q. If the laboratory animals had been washed
17 immediately after application of these compounds,
18 would there have been any toxic effect to them?

19 A. If we had done those tests and left the
20 chemical on for only a short period, 15 minutes,
21 there would be no fatalities.

22 Q. So in other words, some applications were
23 left on for an appreciable amount of time?

24 A. Yes.

25 Q. Could you tell us when the first animal

1 died after application of the 2-sec butyl 4,6-
2 dinitrophenol?

3 A. Twenty-four hours after application of the
4 2-sec butyl 4,6-dinitrophenol, a death occurred
5 among the mice.

6 Q. Dinitrophenols, as a group, have been in
7 use for how long or since when?

8 A. Dinitrophenols were first used
9 approximately 100 years ago.

10 Q. But you don't know if that is a commercial
11 use?

12 A. It has been in commercial use over that
13 period of time. It is used extensively in sprays
14 for control of pests, insects, mites, et cetera.

15 Q. Is the compound 2-sec butyl 4,6-
16 dinitrophenol included in your answer?

17 A. Yes.

18 Q. In your opinion, Dr. Towe, would contact
19 with skin by this chemical have any harmful effects
20 or toxic effects on a human being regardless of the
21 concentration?

22 A. Obviously, any compound if used in heavy
23 concentration may cause problems, but if used
24 properly, it will not produce toxic reactions.

25 Q. What, in your opinion, is a concentration

1 of Dinitro that will not cause a problem if spilled
2 on skin?

3 A. We can't foresee that someone would take a
4 bath in the stuff. We can't be blamed for that. If
5 so, aspirin would be considered abnormally
6 dangerous. Weed killers have to be toxic to work,
7 period.

8 Q. And what, in your opinion, would be a safe
9 concentration of Dinitro?

10 A. Providing that it wasn't put on the skin
11 and held on for a prolonged period of time, I
12 believe that a heavy concentration of the chemical
13 would not be harmful.

14 Q. Could you narrow down approximately what a
15 heavy concentration might be? 50 percent?

16 A. Even if a 100 percent application of this
17 compound were applied to your skin, and was washed
18 off within, say, 20 or 30 minutes, the effects of
19 the chemical would most likely not be absorbed into
20 the skin, perhaps a little irritation, but nothing
21 to the extent that it would be fatal.

22 Our tests indicated what the symptoms of
23 poisoning would be, and we put it on the label. I
24 have heard Mr. Wilson admit that he suffered none of
25 those symptoms.

1 Q. Do you think it could have any permanent,
2 harmful effects?

3 A. Nothing permanent if it was washed off in a
4 reasonable amount of time.

5 Q. Did you ever do any studies on humans using
6 Dinitro?

7 A. Not personally.

8 Q. Doesn't the mortality in the lab animals
9 suggest Dinitro can cause serious illness or death
10 in humans?

11 A. No. The animal mortality is explained by
12 the dose given to small animals. It would take a
13 much larger dose to yield the same effects on a
14 human being.

15 Q. If a human being were 10 times larger than
16 a rabbit or rat, are you saying it would take 10
17 times more concentration of the chemical to have the
18 same effect?

19 A. Yes.

20 Q. In your opinion, are these chemicals toxic?

21 A. Yes.

22 Q. In your opinion, are these chemicals
23 hazardous if used in a reasonable manner?

24 A. No.

25 Q. Would you have advocated against the

1 marketing Dinitro if you found it to be hazardous or
2 an ultra-hazardous chemical?

3 A. Yes. I've stopped Roe in the past from
4 putting products on the market that were too toxic
5 or dangerous. We err on the side of caution. Of
6 course, the government also plays a role.

7 Q. What is Roe's procedure after tests are
8 made?

9 A. We confer with other specialists in the
10 field, our marketing department, and suggest
11 language to adequately warn users. We carefully
12 consult federal law, write the label, and then
13 submit it and all tests to the government.

14 In the case of Pre-merge Dinitro, the
15 government approved the label and warnings. They
16 were clear, concise, and informative. We put skull
17 and crossbones, indicated that it could be fatal,
18 put "absorbed through the skin," "do not get on
19 skin," even medical instructions.

20 We at Roe feel a double obligation to the
21 farmer, to provide him with chemicals that will work
22 and to properly warn him. Accidents happen, but we
23 cannot be blamed. As a part of my job, I receive all
24 medical reports when any of our chemicals cause any
25 injury. Despite hundreds of thousands of

1 applications, there are only a handful of
2 unsubstantiated adverse reaction reports. This
3 product has an extremely low incident rate.

4 (Deposition concluded)

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