

WITNESSES: PANEL A

ALAN STONE, PROFESSOR OF PSYCHOLOGY AND LAW, HARVARD UNIVERSITY

WILLIAM MARCUS, TOXICOLOGIST, ENVIRONMENTAL PROTECTION AGENCY

PAUL RICE, BRITISH CS GAS EXPERT

DAVID UPSHAW, BRITISH BIOCHEMIST GEORGE UHLIG, PROFESSOR OF
CHEMISTRY, COLLEGE OF EASTERN UTAH

HAYS PARKS, DEFENSE DEPARTMENT TREATY SPECIALIST

2141 RAYBURN HOUSE OFFICE BUILDING WASHINGTON, DC

WEDNESDAY, JULY 26, 1995, EVENING SESSION

REP. MCCOLLUM: If we could, we're not really in recess, we need to have as much expedition as we can here. We've got several people who are coming in as witnesses. I'd like to start introducing them if we can. If we can get the first panel cleared out. I know that's not quickly and easily done sometimes. But as we know, we're running long hours in this subcommittee. Our second panel today, I will begin the introduction of. And please have seats. There are name plates up here for your position, and I will swear you in, and then we'll talk about the procedure for this panel.

Dr. Alan Stone has been the -- (inaudible) -- Professor of Law and Psychiatry at Harvard University since 1982. Dr. Stone has been board certified in psychiatry for almost 30 years. He is the past president of the American Psychiatric Society. As a professor at Harvard, he holds appointments on both the faculties of the law school and the medical school at Harvard. Dr. William Marcus, our second witness on this panel is senior science advisor at the Office of Science and Technology of the Environmental Protection Agency. He is board certified in toxicology by the American Board of Toxicologists. He is also the associate editor of the Journal of Environmental Pathology, Toxicology and Oncology.

Dr. Paul Rice, our third panelist today, is a medical doctor and pathologist. Since 1987, he has served as head of Pathology and General Toxicology for the Chemical Defense Establishment in Portdown (sp), Salisbury, England. Our next panelist is Dr. David Upshaw who holds a Ph. D. in toxicology and is a registered toxicologist in England. As a manager of a section of the Chemical and Biological Defense Establishment in Portdown (sp), Salisbury, England, he is involved in research on inhalation and cellular toxicology research. Our next panelist is Dr. George Uhlig. He is professor of Chemistry and Mathematics at the College of Eastern Utah. He also is vice president for research and development at the Thurmick (sp) Laboratories in New York City. Dr. Uhlig is a 23-year veteran of the Air Force, retiring with a rank of Lieutenant Colonial.

And our last member on this panel today, is Mr. Hays Parks, a special assistant to the Judge Advocate General of the Army. He is an expert in international law relating to military operations and has served as a member of the United States Delegations for Law of War negotiations on many occasions. He has taught at the Army, Air Force and Naval War Colleges and is an adjunct professor at George Washington University. Mr. Parks served in Viet Nam as an infantry company commander, and later as a judge advocate. He retired from the United States Marine Corps with a rank of Colonial.

Now if I could ask all of you to please rise, I will swear you in. Raise your right hand. Do you swear or affirm that the testimony you are about to give today shall be the truth, the whole truth and nothing but the truth?

(ALL ANSWERED IN AFFIRMATIVE).

Please be seated. Let the record reflect that all of the witnesses answered in the affirmative. Today's second panel will be a little different in that four of the witnesses, by pre-agreement, will give ten-minute testimony each. I'm going to introduce you in a certain order for this, so you can prepare yourselves for that as I describe the rest of the procedure. Dr. Uhlig will be first; Dr. Upshaw will be second; Dr. Marcus will be third and Dr. Rice will be fourth, to try to just give us a flavor and balance that's in our best estimate to how this should be proceeding. So, Dr. Uhlig, Dr. Upshaw, Dr.

Marcus and Dr. Rice in that order. Now, the way this is going to work, since you've got ten minutes, I'm going to turn the timer on when each of you begins. The timer is scheduled to run for five minutes, not ten. So you'll see it come on, a yellow light will go off, you've have then another five minutes, and it will run down to a second yellow light.

And we really do have to keep with this, just as we do up here with our questioners, or we won't get through this. This will take us a while to do for the better part of probably the next 45 minutes or so. But we need to try to keep on this as much as possible. But I think it's important for the CS gas questions that you're going to be discussing, for us to give you a chance to explain this to us since there's a lot of technical stuff here, rather than just starting out with a question session. So with that in mind, if we could begin with you, Dr. Uhlig, I will turn the timer on if you're ready to proceed. And you're recognized for ten minutes. Dr. Uhlig.

DR. UHLIG: Mr. Chairman, thank you so much for the opportunity to come here. Let me start out with a very positive side. I've heard a lot of negative today. It's been about 15 years since I've had a good helping of collard greens, and you serve some real good ones downstairs in the restaurant. But let's go ahead and press on on CS. I'm a chemist. I'm not an expert in CS. The first time that I experienced what the effects of CS were was when my research assistant, Denita Dingman (sp) and I made a video tape that I've got here of the combustion of CS methylene chloride on cardboard. It worked very well, I should say, and that video is there.

I'm not going to try and bamboozle you with a lot of fancy equations. We're going to make reference to amounts of CS agent. Being an educator, I like to use those tiny saccharine tablets so that you get a feeling for the size and weights of CS based on quarters. We all know about what the (half ?) of a quarter is. Now, CS is an abbreviation that many of us would use for brevity sake. As a chemist, it stands for Alphachloro Benzyldene Malonyl Nitrile (ph). That's a mouthful and a half, especially at this time in this hearing. It really takes its name from the two scientists that discovered it, Corson (sp) and Stouten (sp). They prepared it in 1928. It's been the standard riot-control agent of the Army since about 1959.

I was horrified to find it in the possession of my female students in my classes as a self protection device. Ten percent CS and methylene chloride, and they carried these little tubes in their purses. The physical state, actually, of CS is a powder, usually a creme colored powder, not a gas. You disperse it as an aerosol cloud of finely (diverted ?) particles by blowers, bursting grenades, theradrons (ph) or burning a mixture of the powder and a fuel. The effects of CS are described in Army publications that I was able to get my hands on, as impressive. You need about 20 milligrams per cubic meter to effect incapacitation. This little tiny saccharine tablet that you barely can see is 20 milligrams, actually about that. It weighs -- some of them weight 18 milligrams, some of them 20. So that's about the size in a cubic meter.

Now a cubic meter is about the volume of your standard 36-inch diagonal TV set, okay? Now, if I were to go -- that contains about 35 cubic feet of air. If I stuck my head in there with one of these little tiny tablets for one minute, I would breathe about 1/64th of this tablet if the Army calculations are correct, and they seem to be to me, and that would incapacitate me. What does it mean to be incapacitated by CS? Now, understand this is for the usual dosage. The affected persons experience severe burning sensations in the eyes with copious tears. My research assistant, Denita Dingman

(sp) experienced this in making this video. The eyes close involuntarily. The nose runs and moist skin stings.

Amnesty International produced the report towards the end of the 1980s. They were concerned about the excessive use of CS by the Israeli defense forces or the IDF in the occupied territories. Their findings about what it meant to be incapacitated in excessive amounts of CS -- intense tearing of the eyes, shortness of breath, irritation of the respiratory tract, similar to an acute asthma attack, chemical burns, intense nausea, wrenching abdominal cramps and particularly in children, severe and protracted diarrhea. That's a quote from their report.

I tried to get some feeling for the amount of CS used at Waco. Very difficult to get your hands on accurate data. But nonetheless, it appears that about 400 of these ferret rounds were used, or in excess of them. There are some sources that indicate a flight-right round was used. Some folks would go as high as -- as much as five hundred pounds of CS used. I have a tendency to discount that. I think it was more on the order of around four and a half to seven and a half pounds. If you're an animal, we understand very well what the toxicology of CS is. If you're a pig, for instance, about 5,600 milligrams, which is the weight of about two and a half dollars worth of these quarters. And this is the injected in a space of a cubic meter over one minute.

If you're a guinea pig, it's about a dollar and a half -- the weight of a dollar and half worth of quarters. Now don't go quoting me that a guinea pig's only worth a buck and a half. Okay, it's the weight of the quarters. I ran across an article in the British-tested halon fire extinguishers on humans. They found that the toxicity levels were considerably lower than that for rats. And I'm going to quote from them. The British have a marvelous way of expressing themselves. This may be because of the greater complexity of the human organism and the different body chemistry, or it may be simply the rats were feeling rather odd, but nobody knew.

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Now the best I've been able to do, making a calculation of what it would take to completely kill people in Koresh's size facility would be in excess of 1,000 pounds of agent applied in that facility. I think that that's just totally inconceivable in my mind. I tried to get a better estimate of the amount of CS that could have been injected based on the fireball seen by survivors. And assuming that the dust would carry that fireball through the hallways. I was fortunate in finding a publication from the Fire Institute at Lester, England that gave me a range of dust particles. So that if I were to take about a quarter of a sack of this Equal right here and dispense it into a cubic foot, then I would have sufficient material, and by the way, Equal does burn very nicely, so does sodium bicarbonate, at about those ranges -- so does cement powder at about those ranges. Okay?

So it could have happened. But when you do that, and you cut things down, and you look at it in orders of magnitude less than that, you reach the conclusion about 75 pounds to 750 pounds, which I still think is excessive. I looked at the logistics of bringing that kind of -- that amount of material in. A 55-gallon drum, according to manufacturers literature, contains about 200 pounds of CS. If I'm looking at an agent called CS-1, which is a much more persistent agent, this comes ten, eight-pound bags packed in a 55-gallon drum. So the logistics of the situation, to bring a thousand pounds on site would be five 55-gallon drums; 13 55-gallon drums of the CS-1 material. Methylene chloride, by

the way, in and of itself, is a toxic material.

The amount injected at Waco that day, probably the lowest estimate would be sufficient to incapacitate people in about two hundred thousand square foot K-Mart stores, just to give you a feeling for it. It was probably two to four times the amount that you would need to incapacitate people in David Koresh's complex -- just to give you a feeling for that particular number. I think Attorney General Reno, and this is my opinion, may have gotten her wish regarding the children. Gas masks don't fit children very well. They probably, and taking a look at some of the data, the bodies and number of children were found in the vault area. These people were probably asphyxiated early on in the game, either by the carbon dioxide injected or by the methylene chloride vapor. And all the methylene chloride would have been a vapor. Calculations using the ideal gas law indicate this. You can take me to task, because I didn't do all my sums, but you know, there isn't that much hard data available.

In my opinion, the attempt to bring the siege at the Branch Davidian to a conclusion was really botched. I think it was Congressman Conyers -- my time is up according to my watch -- Congressman Conyers made the statement that a lot of money was being spent to look at this. In my opinion, perhaps the law enforcement agencies should have gone ahead and admitted to making some bone heads and just pressed on and told this committee what they were doing, and take care of it. It's a lot like a cat that we have at home that we call Snoozer. We play hide and seek with Snoozer. And when it's Snoozer's turn to be found, she's got just her head either under the curtains or under the couch. She gets terribly annoyed when we find her, but you know, a quarter of her's under the couch; three-quarters of her is hanging out, similar to this type of investigation. My time's up, Mr. Chairman. Thank you.

REP. MCCOLLUM: Thank you very much, Dr. Uhlig, and I won't dispute your taking the amount of time you did, but for all of you knowing that the green light's still on over here, you would have still had time under my keeping for at least one more minute. But I'm happy that we can save some time, because you did that very well, and I appreciate it. I think all chairmen do. Next, I would like to introduce Dr. David Upshaw. Dr. Upshaw, could you give us your thoughts.

DR. UPSHAW: Thank you, Mr. Chairman. Dr. Rice and I are providing a joint statement, so he will not be --

REP. MCCOLLUM: Could you turn on your mike or bring it up closer, one of the two.

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DR. UPSHAW: My apologies. Thank you, Mr. Chairman. Dr. Rice and I are providing a joint statement. Dr. Rice will not give you a separate statement in the end. I'm Dr. David Upshaw, and I'm accompanied by my colleague, Dr. Paul Rice. I'm the technical manager at the United Kingdom Chemical and Biological Defense Establishment, which is the United Kingdom Defense Establishment responsible for research upon chemicals in warfare. I've worked at this establishment since 1966, after returning from a post-doctoral fellowship at the University of California in pesticide toxicology. I'm a bio-chemical and inhalation toxicologist, and was closely involved in

much of the research which contributed to the U. K. Hensworth (sp) report on CS. Following the first use of this material in Northern Ireland.

My colleague, Dr. Rice, is a medically qualified pathologist with experience in both human and veterinary pathology. And during his ten years at the Chemical and Biological Defense Establishment, he's been responsible for advising the military on the care of chemical warfare casualties, and more recently, he's been actively involved in advising the British Home Secretary on the use of CS by British police forces. We are here today to provide expert opinion on the use of CS at Waco. Before proceeding further, it might be helpful to you for me to provide you with a brief resume of CS and its properties.

As already mentioned, CS is a chemical first discovered in the United States in 1928 and developed for use as a tear gas for the control of civil disturbances in the mid to late 1950s. It's been available commercially and widely used by law enforcement agencies throughout the world for over 30 years. Tear gas is perhaps an inappropriate technical description, since it is not a gas, and when it used it is generated either as a smoke or a fog. When used it may be generated from a pyro-technic device, that's a burning device, or from a solution of methylene chloride, and it was this formulation that was used in general at Waco.

When exposed to CS, human beings experience a burning sensation of the mucus membranes of the eyes, the nose, the throat and to a lesser extent, the skin, particularly if moist. This produces prolific tearing of the eyes, mucus secretion from the nose, and salivation from the mouth, and there is intense breathospasm (ph), and what that means is an uncontrollable blinking of the eyelids similar to that which we all experience when we get a piece of soap in our eyes.

The effects produced are in general dependent upon the concentration of CS in the air surrounding the individual. And some useful numbers are that four milligrams per cubic meter of air, which is a volume of about 39 inches by 39 inches by 39 inches, will disperse most members of a rioting crowd. And 10 milligrams per cubic meter of air will deter trained troops. However, humans can detect CS in the environment in concentrations about a thousand times lower than this, a slight prickling of the nose. Now this is true of course for unprotected individuals. Those wearing gas masks would be totally unaffected.

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While it is the concentration of CS in the air that determines the response, it's important to remember that it is the time for which one is exposed to this concentration that determines the dosage to the individual. You may hear during discussions with this panel, the term CT. This is merely the result of multiplying the concentration, the C, by the time, T, in minutes for which one is exposed, and is a measure of the total exposure of the individual.

I'll now move to a summary of our assessment and conclusions of the use of CS at the Waco incident. Using the information provided to us by the FBI and available within the report to the Deputy Attorney General on the events at Waco, we made an assessment of the concentrations at CS achieved inside the building's complex. To do this we made a limited number of assumptions. Based upon the knowledge that there were four phases of CS insertion from cylinders mounted on

CEV vehicles and supported by ferogrounds (ph), in total around 380 ferogrounds (ph) were used, and in general were fired in support of the cylinder insertions. We have assumed that one quarter, that is about 95 of the total number of ferogrounds (ph) were fired during each of the CEV insertions.

We assume that all of those ferogrounds (ph) entered the building, though in reality we know this was not true. We also assumed a very low rate of air change within the building's complex, about one change per hour, though in reality we know that this also was not true since most windows had been broken, and many large holes had been created in the building walls. The wind speed was also high, I believe it to be up to 28 miles per hour. This higher rate of ventilation within the building would have reduced the concentration of CS to below that which we have calculated and would also accelerate the mixing of CS and air inside the building.

Despite these assumptions, we calculate that the concentrations of CS within the building did not exceed around 110 milligrams per cubic meter of air at the time of insertion, and would decay rapidly after this time. Though it must be accepted, the closer the point of release for a short period of time, it would have been higher than this. To put this in context, this would be the concentration a person would experience approximately 60 feet down wind from a riot control grenade when functioned in the open air.

Our general conclusions are that the concentrations of CS achieved inside the building were not excessive; that the concentrations would have achieved the desired effect of encouraging the occupants to leave the contaminated spaces, and that even if the occupants chose to remain in the spaces for the entire six hour period between the start of the operation and the commencement of the fire, they would only have accumulated a dosage of CS that was approximately 10 to 12 times less than last estimated to cause serious harm to humans.

Finally I would like to add that in reviewing this case, both Dr. Rice and I were greatly saddened and moved by the tragic loss of life that we saw, particularly of the children at Waco. However, it is our sincere belief that CS played no direct part in these deaths. Thank you.

REP. MCCOLLUM: Thank you very much. Do you have anything to add at this point, Dr. Rice?

MR. RICE: Nothing --

REP. MCCOLLUM: Well you did it in five minutes, so I must commend you as well for that expeditious handling. Now that doesn't mean, Dr. Marcus, that you have to have a problem, you take 10 minutes if you want. You're next up and the floor is yours and you are recognized for what time up to 10 minutes you may consume.

MR. MARCUS: Thank you, Mr. Chairman. Mr. Chairman, members of the committee, I am very honored to be here to present a talk. I'm Senior Science Advisor at U. S. EPA. I'm in the Office of-- actually the office of drinking water. I usually confine my studies to compounds that may get into drinking water and cause problems and public water supplies. I was asked to look into CS gas, and I did my usual analysis because at EPA -- I've been there for about 21 years -- and my job has been over that time to look at all the information I could gather about a particular chemical, whether it be

animal or human data, analyze the data and determine what the effects are on people, try to elicit which particular sub group is most susceptible, and then based on all these considerations determine at what level no effect would be found in the most susceptible sub group.

As a government toxicologist I have no particular ax to grind. I'm not a Republican or a Democrat. I'm just a government employee. There have been some interesting speculations about the flammability of methylene chloride. The Merk (ph) Index lists methylene chloride as non-flammable. Now you can get methylene chloride to burn if the concentration in air exceeds 12 percent. But when you exceed 12 percent in air you have a sufficient amount of material to cause respiratory depression and death.

Methylene chloride is toxic on its own. It has the following characteristics of all organic solvents. It causes central nervous depression, causes dizziness at height, it causes some nausea, it causes confusion and it can cause people to become disoriented. CS gas is a very interesting proposition. I was trying to determine -- our distinguished colleague from England -- at what concentration would there be a problem with people. And it came to my notice that CS is approximately three times heavier than air. The way it works, and I think it was so eloquently explained, is that it's really a very fine powder that forms a suspension in air. In order for it to get into the lungs of people, it has to have a diameter no greater than eight microns and no smaller than two. And in the CS-1 and CS-2 preparation, where the solid CS is ground to what they call a micro-fine powder, those are precisely the dimensions of the particles. When it's dissolved in methylene chloride, injected and using a feroground (ph), the material is burst into the air with some heat, the methylene chloride leaves it and you get this fine powder.

The problem that I faced in trying to determine the concentration was it tends to fall down and the closer to the floor you get, the higher the concentration is going to be. And the irony of that struck me is that the children are the shortest, the smallest and the most susceptible and they would get the highest concentration. Children are physiologically different than adults. They have a greater surface area in their lung than do adults. Their respiration rate is -- can be 40 times a minute; an adults is about 15 times a minute. Very young children, given the exact concentration, not the elevated one we know they must have received, would have taken in approximately eight to 20 times as much material simply because they breathe faster, they have higher surface area of their lungs, and they absorb it across their lungs at a higher rate. So the problem with children, as I see it, is that not only are they smaller, but given the same exposures as adults they get a tremendously increased amount. And if we were to use the figures of our colleagues from England, in which he said that they was 10 to 12 times less material available that would cause any harm, that would be sufficient to really make a problem with children because they would have absorbed at least that much greater amount of material.

This is the same sort of analysis that's done when children are going to be exposed to materials from drinking water. And it's accepted methodology, it's been published in "Drinking Water and Health" and it's been approved by the National Academy of Sciences. So we're not talking about some unusual off-the-cuff analysis. So I'm very disturbed at the idea that even with the analysis that shows that a 10 to 12 times less for an adult, it's the same for children, it is not. I would like you to keep that in mind. Children are different. Secondly, the skin of children and thinner. The vessels of the skin are much closer, and the material we are talking about attacks that.

Now Doctor, in the beginning we had an explanation of what the chemical structure of CS gas is, and it's a nitrile. But actually, since I don't expect any of the members of the committee are chemists, to know what a nitrile is, a nitrile is cyanide, and this material has two cyanide radicals on it. When it enters the body the body can metabolize rather easily one of those radicals and free it as a cyanide. The material that they were exposed to, methylene chloride, produces at normal metabolism, carbon monoxide. It doubles, sometimes triples, the amount in the blood.

The irony of this is that children who have fetal hemoglobin have a greater affinity for the carboxi-hemoglobin (ph) and therefore the ability of their blood to carry oxygen is reduced. The fact that cyanide works on every cell in the body, reducing its ability to utilize oxygen, makes the effect worse. And in some of the papers that have been written, that is the mechanism of action. In fact one Nobel prize winner, Dr. Haymonds (ph), in the 1890s, talked about nitriles as the mechanism of action, the production of the cyanide radical at metabolism. I had the honor of working with his son who also received a Nobel prize in medicine.

So I determined that the most susceptible sub group was in fact the children. Now I brought with me a respirator. This is not a gas mask, this is what you use -- by people who spray pesticides or who are exposed to chemicals that shouldn't be breathed in. This is what it looks like. One puts on these -- two openings -- a cartridge. And I just brought it along because I wanted the committee to have the opportunity to find out how difficult it is to operate this, and a gas mask is worse. You must push the material out here and you breathe it in through these valves. I'm a very vigorous adult. A child would have a tremendous problem with this. And I invite any member of the committee to just try it and see for themselves what I am talking about.

I would like to thank the National Library of Medicine's Specialized Information Services Group for providing me with support so that I could get a hold of and present to the committee many of the papers that are available in the published literature. They were very helpful and they provide this service to many, many scientists and physicians looking for information. I would also like to thank the committee for the opportunity of talking about the problems of the exposure of toxic chemicals in children and the problems that were faced by our brave people at Waco. Thank you.

REP. MCCOLLUM: Thank you very much, Dr. Marcus. Without objection the statements of all of the panelists on this panel will be admitted to the record as well as the accompanying documentation that you may have with you, and the tape I think that Dr. Uhlig is offering into the record. We are now ready to proceed with the questions to the panel. I will yield first to Mr. Schiff for five minutes.

REP. SCHIFF: Thank you very much, Mr. Chairman. Mr. Chairman, just before asking questions I would like to make a brief observation, and that is we are now at the point where we are -- we've already discussed at great length, and will probably discuss again I assume, the decision of the Federal Bureau of Investigation to try to end the siege. And we've had a great debate over whether they should have waited longer and could have waited longer or not.

This is now a more focused issue on once the FBI had made the decision to try to end the siege, whether one agrees with that or not, was the use of CS gas in this plan appropriate or was it

dangerous, and therefore we are focusing on a technical issue. And I just want to say that I've received a great deal of information about CS gas from all different sources and I have to say, Mr. Chairman, as a former prosecutor and a member of Congress, I'm accustomed to witnesses having different recollections of memory, of fact and I'm accustomed to witnesses have differences of opinion and judgment. I had this image that the scientific community at least would all be in agreement, we could all at least get past this issue one way or the other very rapidly. And it appears not to be the case, as we've seen from the panel here.

And so with that in mind I trust that perhaps when this panel is over we'll have more of a background as to why there are the differences in the scientific opinion of whether CS gas was appropriate or not. With that, Dr. Uhlig, if I may turn to you, sir. You have a military background as well as being a chemist, is that right?

MR. UHLIG: That's correct, sir.

REP. SCHIFF: And did your military background involve chemistry also?

MR. UHLIG: It did, in fact in 1982 I spent about four and a half months putting together a document regarding chemical warfare agents for the Air Force, for the Air Force Aeronautical Laboratories in Dayton, Ohio.

REP. SCHIFF: Let me come right to the point. Dr. Upshaw testified that in his judgment there was no toxicity problem with respect to the use of CS gas in the compound, and I believe that you said that you believe some of the people in the compound, in the vault, were asphyxiated as a result of the use of the gas. Did I understand you correctly?

MR. UHLIG: You did, Congressman. I would submit that the use of carbon dioxide methylene chloride -- these agents would have sunk to the bottom of the building where the vault was used to protect children in particular. These are suffocating agents in and of themselves.

REP. SCHIFF: I wonder if you would expand on that. Are you saying that the CS gas -- the CS gas is actually a powder, to be technical --

MR. UHLIG: It is.

REP. SCHIFF: Is that right?

MR. UHLIG: That's correct.

REP. SCHIFF: Are you saying that this is a suffocating agent by itself, or are you saying that things produced with it or accompanying it are suffocating --

MR. UHLIG: No, I'm saying the material used to dispense it, in this particular case it was dissolved in methylene chloride. The methylene chloride is an agent that does suffocate -- not only methylene chloride, but carbon dioxide. And so far in testimony today I have not heard anyone be concerned

about the use of carbon dioxide and methylene chloride. All the methylene chloride would have been a vapor.

REP. SCHIFF: All right. Now, the methylene chloride and the carbon dioxide, was that accompanied with the CS gas in both ways it was delivered?

MR. UHLIG: Congressman, as far as I can determine, if you look only at ferret rounds, and the Model 5 ISPRS (?) system -- those two were specifically mentioned, and they indeed do use methylene chloride as injection devices. If there was carbon dioxide used, it would have been with the (Mark 5 fogger unit ?). That's a U. S. unit though.

REP. SCHIFF: Maybe we should take a moment and let me ask you, please, how is it -- how do you understand the gas was inserted into the compound? How did the FBI go about doing that?

MR. UHLIG: Congressman, I've got so many doggone ideas on that in my investigations. The official version that I have is they used a Model 5 Israeli-designed system to inject the CS methylene chloride mixture. Ferret rounds in and of themselves contain 10 percent CS in methylene chloride. If the calculations are correct, the mixture in the Model 5 ejector bottles --

REP. SCHIFF: Could I interrupt you at this point?

MR. UHLIG: Sure.

REP. SCHIFF: Is there a difference between Model 5 injector bottles and ferret rounds?

MR. UHLIG: There is.

REP. SCHIFF: Would you please explain that?

MR. UHLIG: Sure.

REP. SCHIFF: And both were used in this -- both were used in this situation?

MR. UHLIG: That's correct, congressman.

REP. SCHIFF: Well, how are they different? Could you explain that?

MR. UHLIG: A ferret round is about 40 millimeters in diameter -- typically 37 to 40 millimeters. You use a launcher. These were fired by Bradley combat vehicles. That's a typical ferret round. The M-5, or the Model 5 ejector bottle basically contains roughly 30 grams of CS dissolved in almost 1,100 grams of methylene chloride, and 700 grams of a carbon dioxide propellant to expel it.

REP. SCHIFF: I have to interrupt, because my time has also run out. I believe I will have more time in a little bit.

MR. UHLIG: Okay.

REP. SCHIFF: But the bottles were inserted by the tank moving right up and putting the barrel into the building -- is that right?

MR. UHLIG: That's correct, sir.

REP. SCHIFF: All right. And I just want to ask -- make sure I understood correctly: It's your opinion that the gas, or the substances with it, may have directly caused the suffocation of people in the compound?

MR. UHLIG: The methylene chloride and the ejectant, carbon dioxide, could have done that, in my opinion.

REP. SCHIFF: How certain do you feel that it did?

MR. UHLIG: Oh, dear. With the children, I think there's a good chance. In dealing with probabilities, probably a 60 percent, or . 6, . 7.

REP. SCHIFF: Thank you very much. My time has expired.

REP. MCCOLLUM: Thank you, Mr. Schiff. Mr. Scott, you are recognized for five minutes.

REP. SCOTT: Thank you, Mr. Chairman. Mr. Parks, the CS gas is subject to some discussions of our treaties. Can you tell us some background of where the CS gas is affected by various treaties on military use, and what effect that has on civilian use of CS gas?

MR. PARKS: Yes, sir. First, I've submitted a written statement, and I appreciate the comments of the chairman that it will be incorporated into the record, so I will not go through the entire long answer for you. Let me make several critical points here. First, the United States does not consider riot control agents -- and I include CS in that -- to be a chemical weapon. The second --

REP. SCOTT: Could you say that again?

MR. PARKS: The United States does not consider riot control agents -- and I include CS in that -- to be a chemical weapon. Second, the 1993 Chemical Weapons Convention does not apply to law enforcement at all. Third, the Chemical Weapons Convention is not yet in force. And, fourth, the United States is not a party to it.

The riot control agents, as the previous panelists have described, were developed in 1928 as we were developing our chemical weapon deterrent capability. At the time that they were being developed, and subsequently, however, there was a concern that the use of a riot control agent on the battlefield might be misperceived by an opponent as use of a lethal chemical weapon, resulting in an escalation in the chemical weapons environment on the battlefield. Hence, restrictions have been placed on their use on the battlefield so that the opposing force would not respond in kind. However, riot control agents --

REP. SCOTT: You mean -- you don't mean in kind, you mean they might respond --

MR. PARKS: That is, by a more serious lethal type chemical weapon. However, riot control agents, as the previous panelists have indicated, have been widely used in law enforcement, and it was not the intent in any of the treaties related to the use of chemical weapons on the battlefield, to restrict the use of CS or other riot control agents in domestic situations.

REP. SCOTT: So in this case it was not a violation of any treaty; and whatever treaties there may be, the danger of CS gas was not the reason for it being a violation of the treaties that other countries are parties to?

MR. PARKS: Well, the particular treaty where I think everyone is -- to which everyone has referred, is this 1993 Chemical Weapons Treaty, and it is not yet in force. There would have been no violation of that treaty and the use of CS in a domestic law enforcement situation.

REP. SCOTT: Thank you. I'm not sure who this question ought to be aimed at, but we have focused all of our attention on CS gas. If we were going to use a tear gas or -- I use that term generically -- what other kinds of gases should have been -- would have been considered, and can you state the relative danger of the other alternatives to determine where CS gas would have fallen into that mix? Mr. Upshall?

MR. UPSHALL: Yes, sir. There are two commonly used tear gases. They both are aerosols or smokes. CN -- (inaudible) -- and CS, the smoke they're talking about. CN was used in the first World War and was by and large the tear gas that preceded CS. It is about five times more toxic, and is generally being superseded by CS in most police -- law enforcement agencies throughout the world for that very reason. It is still available, I believe, in some police forces.

REP. SCOTT: Does anybody else want to comment on that? Is it fair to say that of all the gases that could have been selected, CS was the safest, least lethal, and most appropriate?

MR. UPSHALL: Unquestionably yes.

REP. SCOTT: Anybody disagree with that?

MR. : I have to disagree in the sense that I'm not sure that you want to select a gas to do that.

REP. SCOTT: Well, if you were going to select a gas, CS would be the preferred choice?

MR. : Well, CS -- you have to remember why CS got developed. The British were having a lot of trouble in Cyprus with riots, and the CN they were using didn't control the riots very well, so they attempted -- they use a CN gas. They tried to control the riots with CS, and they managed to do it much more effectively. So it turns out to be a very effective riot control agent, which means it gives a much better response and a lower concentration. And therefore I think the British felt that it was less toxic.

REP. SCOTT: Well, did -- Mr. Upshall, you just said that it was not as lethal as CN.

MR. UPSHALL: Let me clarify that. CS was developed because it was safer. It is more irritant; therefore, the margin between the effective dose and the toxic dose is considerably wider than that of CN, and that is why CN has been superseded by CS. The safety margin for that compound is considerably greater.

REP. SCOTT: Thank you. How should it be administered, and what kind of consideration should you take into -- what sort of factors should you take into consideration, like the wind and other factors that may have been on site? Mr. Upshall?

MR. UPSHALL: It depends what situation you're considering. If you're considering rioting crowds in the open air, for example, you would be considering the wind, because you would want to know which way the wind was blow and at what speed it was blowing, obviously -- or you might miss the target that you were aiming for. And in enclosed areas you are considering the concentration that you might achieve in that enclosed area, so you have to consider the mass of material that you wish to insert.

REP. SCOTT: Let me ask you then -- my time is almost up -- what kind of -- How well can you predict the reaction that people will have if they are subjected to this gas? There was apparently a tense situation and with the people coming in and shots being fired, and with the kind of person that we had in David Koresh. How accurately should we be able to predict the reaction of the people in the compound? Whoever wants to answer, Mr. Upshall or Mr. Rice?

MR. RICE: I think it's true to say that above -- (inaudible) -- concentration in the air, the signs and the symptoms that people develop in response to exposure above a certain point are not exceeded. In other words, once you get above a certain concentration the signs and symptoms don't get any more severe. That concentration, we believe from studies we have done, is around 10 milligrams per cubic meter. That is the concentration, if you remember, that will deter trained military troops. Above that concentration the symptoms persist, but they don't get any more severe. We can't deny that those symptoms are nasty -- they're horrible, they're not very pleasant -- but the whole reason for using an agent such as a tear gas is to induce these symptoms, the point being above a certain concentration they don't get any more severe in proportion to the increase in the concentration.

REP. SCOTT: Thank you. Does Mr. Upshall want to answer the question?

MR. UPSHALL: No, I agree with what Dr. Rice has said. We're talking here about the irritation produced.

REP. MCCOLLUM: Thank you very much, Mr. Scott, your time is expired. Mr. Chabot, you're recognized for five minutes.

REP. CHABOT: Thank you. I'll yield my time to the gentleman from New Mexico, Mr. Schiff.

REP. SCHIFF: I thank the gentleman for yielding. Dr. Uhlig, I would like to return to you, please. As I indicated before, I have been told everything from that CS is the mildest form of substance that

could be used if one is going to use a substance in this situation; to the opposite, that it could have potentially lethal effects, at least with the gases that might be included with it. And I want to come back to your testimony about asphyxiation. I am told that -- or possibly, a 60 percent chance of asphyxiation, which is what I believe you said -- I am told that in the studies that have been done on CS gas that there is no documentation of any lasting injury from the use of that gas, even if its effects could be temporarily unpleasant. Could you respond to that please?

MR. UHLIG: I'd be pleased to, Congressman. Amnesty International's report indicated that the excessive use of CS in the occupied territories by the Israelis resulted in deaths, both of children and aged people. My colleague here from the United Kingdom has another document before him, that I was able to get a hold of as well, that documented some Canadian studies that were made during the Vietnam War that indicated again that there were deaths attributed to CS in very high concentrations. Now, albeit in this particular document that the Canadians have furnished, and that my compatriot has here, those particular devices were pyrotechnic dispensers, where the heat of a charge dispenses the CS methylene chloride mixture, or the CS gas as a powdery charge. I'd also add, congressman, that if we wanted to clean out this room it would take about the weight of two quarters to completely incapacitate us at about 10 or 15 milligrams per cubic meters. So it's not much of an agent at all to chase you out.

REP. SCHIFF: Mr. Chairman, I would like to reserve the balance of my time at this time.

REP. MCCOLLUM: I yield then to Mr. Heineman what time I have left -- you have left.

REP. HEINEMAN: Mr. Chairman, I will yield all of my time to the gentleman from New Mexico, Mr. Schiff.

REP. SCHIFF: I thank the gentleman for yielding. I'm sorry for that, Dr. Uhlig, we have certain procedures to follow and controlled time.

MR. UHLIG: (Off mike) -- congressman.

REP. SCHIFF: Back to you, sir. Let me just ask you -- maybe I didn't mean -- did you complete your statement about the your report?

MR. UHLIG: I did, sir.

REP. SCHIFF: Let me ask you this question: As you have just heard, and as you know, the British government has used -- I believe has used CS gas extensively in various situations. Do you have any knowledge of reports on the British use of CS gas that you could refer to?

MR. UHLIG: The only report that I found, and had access to, is the one that is laying on the table right here from Her Majesty's (Stationery ?) Office. And if I could borrow that please? This is a report of the inquiry into the medical and toxicological aspects of CS. And in that particular document -- oh, let's see, it's -- I think you can go through it -- it's around page 20 or so -- the deaths. They talk about deaths in Vietnam through the use of these agents. Now, the interesting observation out of this document basically is that you would have to fire 40 to 50 of the pyrotechnic flight-right

devices into a room -- and correct me if I am wrong -- 10 by 10 by 8 roughly -- in order to cause death in --

REP. SCHIFF: Is there a name -- is there a name to this report that you are referring to?

MR. UHLIG: Yes, I just gave it to you.

REP. SCHIFF: Would you say it again please?

MR. UHLIG: Let me borrow that --

REP. SCHIFF: Or, Dr. Upshall?

MR. UPSHALL: If I might, it's commonly called the Hensworth (sp) Report in the U. K.

REP. SCHIFF: All right, thank you very much. Go ahead, Dr. Uhlig, please?

MR. UHLIG: Okay. It said that the use of 40 to 50 projectiles in a room was clearly outside the realm of possibility. And yet at Waco 400 or so -- approximately 400 of a non-pyrotechnic round, but having about the same volume of agent, were fired into that complex. That to me would suggest that it was excessive.

REP. SCHIFF: Now, are you aware if any autopsies were conducted on the people who died in the compound, and whether they confirmed asphyxiation? And, if they do, is there any way to confirm what the source of the asphyxiation was, given the fact that there was a fire and other circumstances there?

MR. UHLIG: I don't know that you can confirm what is -- after the fire situation, that you can confirm how much of the deaths -- or how many of the deaths were attributed say to cyanide generated by the decomposition of CS. CS, in my opinion, decomposes to give ethylene; ethylene, when it is ingested in the body, would more than likely be converted to ethanol. The carbon dioxide concentrations in there -- typically in a fire situation you have large quantities of carbon dioxide generated. It would be very, very difficult to ascertain how much hydrogen cyanide in the autopsies was due to CS, and how much of it was just due to normal decomposition of materials within the structure.

REP. SCHIFF: A great deal of emphasis has been placed on the fact that there were high -- relatively high winds blowing in the area of the compound in the day the CS gas was used, and I believe stated, or at least implied, that the windows had been broken out, so that there was a lot of air going through the buildings at that time. Wouldn't that have dissipated the gas -- whichever gas we're talking about -- whether the CS powder or the methylene chloride or the carbon dioxide -- enough to reduce them certainly to below lethal levels?

MR. UHLIG: That might be the case. I didn't calculate 110 milligrams per cubic meter, Congressman. I calculated more on the order of about 40 to 50 milligrams per cubic meter of CS gas in the facility. And that was a little bit lower than my colleague from the United Kingdom

calculated. That was a back-of-the-envelope calculation. I think we're both hunting in here. To me that's anywhere from two to five times more CS than you need to incapacitate a person, even with the winds.

REP. SCHIFF: Do you know what the -- so even with the wind, in your judgment, you're saying it was an excessive amount of CS gas?

MR. UHLIG: In my opinion, it would be, as an observer from the outside.

REP. SCHIFF: In the vault, which is where you testified to where the bodies of people who, if they died in this way, most likely did, do you know what the ventilation in the vault was?

MR. UHLIG: My understanding is it was windowless. There wasn't any ventilation in there.

REP. SCHIFF: So every room in the compound didn't have a window, as far as you know.

MR. UHLIG: As far as I know, that's correct, Congressman.

REP. SCHIFF: What information did you receive -- did you ever receive any official information, in looking at this, as to how much gas, CS gas, was actually used?

MR. UHLIG: Congressman, I tried hard to find that, and I ran up against a brick wall, quite frankly. People were very reluctant on the part of the government to give me any information, and I understand that. With many, many people calling in, and I'm sure they would say, "Gee whiz, who is this fellow from a rural community in Utah who wants to know and get a firm fix on what we've done? "And I'm sorry, Congressman, I didn't get that. The information, some of it came second-hand as to how much had been injected.

REP. SCHIFF: My time has expired. Again, thank you, Mr. Chairman.

REP. MCCOLLUM: Ms. Jackson Lee, you're recognized for five minutes.

REP. JACKSON LEE: Thank you very much, Mr. Chairman. And thank you, gentlemen. I say this, as we proceed with these hearings, that we're really trying to get to the solution and acknowledge the great tragedy that was experienced. And we hope that you gentlemen may be able to cast a lot of light on either what happened or how we can avoid it prospectively. I think one of the points that was made in reference to a study that might give us some pause, Dr. Upshaw and Dr. Rice, for concern would be the Amnesty International study. And I'd like for you to expand on that as it relates to CS gas. Is that a document that we can rely upon? And what do you think of it? Is it reliable as to this particular gas? And I might add, let me be corrected. I noticed that Dr. Upshaw said it was like a smoke or a fog, so in actuality, not so. And I have another question, but I do want you to take the time that you need. It's a very important point for me.

MR. RICE: Could I -- (inaudible)?

REP. JACKSON LEE: Go right ahead.

MR. RICE: We've looked at that Amnesty International report and it contains testimony to several cases in which people were exposed to tear gas. And that's all the report says -- tear gas. It doesn't specify which particular tear gas. The problem that we had with that particular report, particularly when you read on to the end of the report, where it says that the Israelis had access to both CN and CS tear gases --

REP. JACKSON LEE: Say that again; C --

MR. RICE: -- S and CN.

REP. JACKSON LEE: N like in Nancy.

MR. RICE: Yes --

REP. JACKSON LEE: All right.

MR. RICE: -- tear gasses is that those people could have been exposed to either one or both. Now, from what we've already said, we clearly know that CN is far more toxic than CS. That's the first point. Looking at the actual medical documentation of those cases that were exposed, there is reasonable doubt as to what the cause of death of those people were mentioned in that Amnesty report. I think it's not beyond reasonable doubt to suggest that a lot of those people died of cardiovascular disease, okay, maybe induced by the stress of trying to get away from the gas cloud that they were exposed to. But I see nothing in that report whatsoever that links unequivocally the exposure of those people to CS.

REP. JACKSON LEE: Was the study done by chemists and physicians, this Amnesty International? Did they retain scientists to do this analysis, to your knowledge? I'm not sure of their expertise in that area.

MR. RICE: Not to my knowledge. But, I mean, I haven't really gone into that report that deeply, whether any analysis was done. The report on first reading to me appears to be a fairly anecdotal one where these cases were accounted in a fairly historical way. And I saw no evidence of any deep scientific investigation of those cases.

REP. JACKSON LEE: And I'll let you answer in a moment, Dr. Stone. But let me say, since we are all fairly here looking for solutions, we might then cast great doubt on relying upon that document if we're trying to solve and/or prevent a future tragedy in terms of the reliance of what it says about CS.

MR. RICE: What's said in that report and what's said in a lot of these reports that account human exposures to tear gasses particularly is that it's very difficult from all those reports -- and the Amnesty International report is just one of them -- what the exposure to the gas is in terms of concentration and time. And those two parameters are essentially very important to be able to gauge whether the exposure has been a near-lethal level to the gas or not. And we don't have that

information from the Amnesty International reports.

REP. JACKSON LEE: Let me pursue just a moment with Dr. Upshaw to ask him, in his analysis and in his report -- you made the point that, or at least it appeared to me, that individuals would not be immobilized. There might be the tearing that comes from soap in the eye and certainly some other physical ramifications. I want you in your answer to include the impact on children. I'm now at a point now where there are large gaping holes inside the building -- hopefully debris is not in the way -- and an opportunity for individuals to escape. However, there is this smoke and this fog. Can they get out? Are they still mobile? I read something here that said they might even be able to do math problems. I'm not sure which document I was reading that. So they might have some certainly mental capacities. But share with me whether or not, if you were seeking to get out, if there was gaping holes and sunlight coming through, could you get out with the gas, smoke, smog around you?

MR. UPSHAW: Yes, I share with you the thought that I couldn't do mathematical problems if I was exposed to CS. My main objective would be to get out of the environment as quickly as possible.

REP. JACKSON LEE: That would be my chief concern.

MR. UPSHAW: There is no evidence, documentary evidence -- and that is also true within the Hensworth (sp) report -- that children are more susceptible than adults to the sensation of the irritation to CS. The evidence would suggest that most human beings are equally sensitive, regardless of their age. CS is, in a military context, termed a physical incapacitant as distinct from what I would call a central incapacitant. In other words, it has no effect whatsoever on your cognitive functions. It only has an effect on the sensation of pain. It's a peripheral sensory irritant. It irritates the mucus membranes in that sense. There is a tight blinking of the eyes because of the irritation to the eyes. But in my experience -- and I have been exposed to CS many times -- the urge to get out of that environment allows you to (peak?) and move, and you know how to get out certainly. And there's no physical impairment of your ability to leave that environment.

REP. JACKSON LEE: You are independently associated with a facility in England. Is that my understanding?

MR. UPSHAW: I'm a government employee in the chemical and defense -- biological and defense establishment, which is now part of one of the ministry of defense's defense research agencies.

REP. JACKSON LEE: You have no actual link to the Department of Justice or you're not an employee of the Department of Justice?

MR. UPSHAW: None whatever.

REP. JACKSON LEE: And as I conclude, my understanding -- your voice is kind of soft -- you're suggesting to me, in the answer that I asked for, the question that I asked, that there was no impairment to the mobility of an adult or a child if there were opportunities to escape; again, neither one of us being present, but if there was a door open, a window open or a gaping hole that was going out to an outside area, with that CS inside, people would still, as I understand it, and children,

be able to move in the direction of getting out.

MR. UPSHAW: Correct.

REP. JACKSON LEE: Thank you very much.

REP. MCCOLLUM: Thank you, Ms. Jackson Lee. Mr. Souder, you're now recognized for five minutes.

REP. SOUDER: I wanted to ask Dr. Upshaw and Dr. Rice, have you always been government employees? Have you ever done any work on behalf of the gas manufacturers or any representatives of the gas companies?

MR. RICE: No.

MR. UPSHAW: None whatsoever.

REP. SOUDER: Okay, thank you. I yield the rest of my time to Mr. Blute.

REP. BLUTE: Thank you very much. I thank my colleague for yielding. And I want to thank all of the panel for their testimony. I'd like to focus my attention now to Dr. Stone and welcome him as a fellow Massachusetts resident. You're a distinguished member of the Harvard University faculty in both psychiatry and law. Is that correct?

MR. STONE: Yes.

REP. BLUTE: My thought, when I read that, was that that combination of disciplines is probably perfect for trying to understand this Waco tragedy. But having said that, I know you also did a report on behalf of the Department of Justice, is that right, on the Waco incident?

MR. STONE: Right, right. I did. And I was very critical of the use of CS gas in the presence of children.

REP. BLUTE: I understand. But before we talk about that, you also were critical of the government in general. I want to touch on some of those issues and then move to the CS gas. You wrote in the New York Times that you found the government's investigation seriously deficient. Now, does that mean that you read the Treasury report and you found that deficient?

MR. STONE: I found both reports deficient.

REP. BLUTE: Okay, I wonder if you could comment where you found them deficient?

MR. STONE: Well, let me just -- we don't have too much time, so let me just give you the high points. I think one of the critical issues that the committee hasn't gotten to is we had 80 ATF agents come to the compound in cattle cars. We have heard the Branch Davidians described as killers in a

deadly ambush. Now, you might ask Mr. Jamar when he comes back, because he told me this, that they could have easily killed all of those agents before they even got out of the cattle cars with the kind of weapons they had.

REP. BLUTE: Fifty-caliber --

MR. STONE: Whatever. They had enough weapons to kill all those agents. Now, that's the first point. The second point is only four agents got killed. And they got killed up on the roof. Now, I want you to think about that. The whole purpose of this raid was to get to the armory, which was supposedly locked, on the second floor. Those poor officers are up on the roof going into an armory that is supposedly locked. Well, as soon as they got shot at, they know that the armory is unlocked. Now, whoever is responsible for this in terms of killing agents or whatever, the sheer stupidity of this is unbelievable. I don't think you have focused adequately on this fact. Here these agents came. As soon as they were shot at, that meant there was no longer a locked armory. Now, the second floor, they also knew, was where the women and children were. So I think the whole presentation of those issues was not adequately --

REP. BLUTE: You think the report missed a lot of the important facts --

MR. STONE: In my view, yes.

REP. BLUTE: -- and approaches that might have been taken. You also go on to say that the government never gave us a candid account of what went wrong. That infers something different. What do you mean by that?

MR. STONE: The question in my mind was, after reviewing all this stuff and being briefed by the people in the Justice Department and the ATF, was why was it necessary to carry out the search warrant in this way? I was convinced that they had reasonable cause to serve the search warrant. I only didn't understand why they had to do it with 80 armed men, right? Now, I accept the fact that Koresh was molesting, sexually abusing young girls. But that still doesn't explain why you deal with that situation with 80 armed ATF agents. Now, I find that ATF has been slippery about that. And I'd like to know why was it necessary. At times they said that the -- ATF would say that these people were dangerous to their neighbors. I have never seen any evidence that that is so.

REP. BLUTE: Let me move on, if I could, because we do have limited time, to the question of the gas, because you've also been outspoken on the use of the gas. And in your report you talk, as others have on this panel, talked about what the gas can do -- inflame the eyes, nose and throat, produce choking. You write that "It is difficult to believe that the U. S. government would deliberately plan to expose 25 children, most of them infants and toddlers, to CS gas for 48 hours. "

MR. STONE: Right.

REP. BLUTE: That statement is very strong. I wonder if you'd elaborate on that.

MR. STONE: First of all, toddlers and babies cannot run out of a compound because they can't walk themselves. So somebody has to take them.

REP. BLUTE: So if the parents were immobilized by this gas, the children would be totally defenseless to even getting out.

MR. STONE: So we have to remember there were lots of babies and toddlers who don't have the ventilatory capacity to use a gas mask. That's the first thing. Now, the second thing is, I took care of babies who have chemical pneumonia. It's an incredibly debilitating illness. Now, although we've had lots of talks about this, we haven't heard how it works. And what I'm concerned about, this is an agent which burns mucus membrane, which inflames and irritates mucus membrane. So after a baby breathes it into its lungs, just like a sunburn, right, hours later, then the lungs will start to have blisters, just like the sunburn comes on your face. And then the fluid comes into their lungs and they get pulmonary edema. And I spent many nights trying to keep babies alive with just this problem, okay. So -- and the research that the British have done, you will see that when they keep their animals in the atmosphere long enough, it's not that they die immediately. It's eight or 10 hours later when they develop pulmonary edema.

REP. BLUTE: So your final conclusion here, because we're running out of time, is that although it may be justified to use this gas against adults in a riot or in some other valid law enforcement matter, it is totally inappropriate in any case, at any time, to use this gas against children.

MR. STONE: I think -- yes.

REP. BLUTE: Thank you, Mr. Chairman.

REP. MCCOLLUM: Thank you very much. We have a dilemma. We haven't had the second bells yet, but I think that it would be prudent, since we now have a series of votes on the floor they've been holding for us, to take a recess before we conclude this panel with other questions. We will be in recess, this subcommittee will be then, until five minutes after the conclusion of the final vote on this series. The subcommittees are in recess.

(Recess.)

REP. MCCOLLUM: The joint subcommittees will come to order. When we recessed it was going to be Mr. Brewster's turn, and I will yield to Mr. Brewster five minutes.

REP. BREWSTER: Thank you, Mr. Chairman. First off I happen to agree with Dr. Stone that the plan was fatally flawed when the assault started on the compound back February 28th. Secondly I think the execution of assault on April 19th was almost equally flawed as to the context of the way it was happening. And I happen to be one who believes that had there been a time frame of weeks, days, weeks, months allowed to continue, that many of those people would have come out. Maybe not Koresh, but some of the others.

But some of the testimony here concerning the gas seems contradictory to me. Dr. Uhlig, you said that methylene chloride was a flammable agent in the CS gas. The best I remember of the halogen family, most of the halides at least are used as flame retardants in many cases. They would have taken a concentration, a very high amount of concentration of methylene chloride for it to be

flammable, far more than the number of canisters that were used.

MR. UHLIG: No, sir, the data on this that we ran would not suggest that. The second thing, Congressman, if you get it in a vapor form it -- I think the flammability limits, the lower limit, is about 13 percent. So it will go in the vapor form. None of it was puffed. The second thing I would like to also state, that when I was a young first lieutenant in the military, my secretary was cleaning her typewriter -- in those days of course we had typewriters that had ribbons and so on -- she was using a preparation with methylene chloride in it. From the time it took me to get from her office to the men's room and back again she had literally passed out over her typewriter. We got her out of there and were able to revive her happily. But the flammability of this stuff -- it does burn, there's no question about it.

Now you're right, carbon tetrachloride is also known as CPE in the industry. It was first used by I believe the German Luftwaffe to put out engine fires. But I'll guarantee you that methyl chloride, methylene chloride and chloroform all will burn.

REP. BREWSTER: Bromides, fluorides, chlorides in general -- the halogens -- are flame retardants as opposed to --

MR. UHLIG: That's a horse of a different color. As soon as you start looking at bromides and iodides (ph).

REP. BREWSTER: I have a letter from the industry that says it would have taken 300 canisters of CS tear gas in a room of 840 square feet, as opposed to this building of about 370,000 square feet, to have made a flammable concentration.

Dr. Marcus, I find it interesting that you are testifying in this and that you are an employee of EPA. Do you also testify for plaintiffs on occasion for pay?

MR. MARCUS: Yes, sir.

REP. BREWSTER: Is that common among federal employees, EPA employees?

MR. MARCUS: Other EPA employees do do that, yes, sir.

REP. BREWSTER: Is it common? Do most EPA employees do that?

MR. MARCUS: No, not most.

REP. BREWSTER: How do they do that in their work schedule? I guess I'm curious about that. Do you have an office in the EPA building that you work in regularly?

MR. MARCUS: I do not. But when I was consulting I did. As you know, federal employees get 210 hours a year annual leave. I happen to participate in something called flex-time and I get one day every two weeks as a day off. There are also holidays and weekends.

REP. BREWSTER: Have you ever run into a situation that could be a problem as far as that testimony is concerned, going over extra days or in a case where it could be indirectly connected with EPA or the government?

MR. MARCUS: First, in order to avoid a conflict of interest, I always explain to the lawyers that try to hire me that if the government is a party, even peripherally to the case, I cannot appear because by definition I would be serving two masters, and I think that is conflict of interest. And if it weren't for the fact that I'm appearing here for EPA, I would consider this a conflict of interest.

REP. BREWSTER: You don't have an office at EPA? You work out of your home?

MR. MARCUS: Yes, sir.

REP. BREWSTER: Do many EPA employees work out of their home? Why do you not have an office there?

MR. MARCUS: I was one of several hundred people who were injured in the EPA building because of -- I am sure you know -- toxic carpets that were put down.

REP. BREWSTER: No, sir, I don't know. I'm new here, I've only been here four years. What did the EPA -- you mean our Environmental Protection Agency -- our agency -- put down toxic materials in their own building?

MR. MARCUS: Well actually we -- I guess that's correct. There were well over 600 people who made ill. Of that about 10 percent, about 60 work either at home or in alternate spaces, and I am one of those 60.

REP. BREWSTER: Did you receive any disability out of it or anything like that?

MR. MARCUS: I had to go through the entire process that would have awarded a disability, but since I was able to perform my job at home, they decided to allow me to continue to work at the capacity as a senior science advisor.

REP. BREWSTER: And Dr. Uhlig, as one who has some background in chemistry, pharmacology, etcetera, CS gas -- does it affect the central nervous system, autonomic nervous system? Is it a CNS depressant, CNS stimulant, nerve synapsis? What is it -- where does it affect the body and why is it inconsistent in the way it affects the body?

MR. UHLIG: Oh, that's a very interesting question. It does not affect the central nervous system. It does affect the peripheral nervous system in that --

REP. BREWSTER: (Off mike)

MR. UHLIG: -- in that it attacks the nerve endings and makes them very sensitive. And as I explained earlier, part of the mechanism is by the production of cyanide.

REP. BREWSTER: Wouldn't a lot of things produce cyanide under certain circumstances? The burning of a lot of household materials, would they not also produce cyanide.

MR. UHLIG: Plastics in particular at high temperatures, some of them, especially those like teflon, will produce cyanide gas, that's correct.

REP. BREWSTER: Was there a substantial number of people in this fire that had cyanide in their bodies before an autopsy?

MR. UHLIG: I did not read the autopsy reports, but I am informed that there were levels of cyanide found in those unfortunate people with whom there was enough material left to do that sort of analysis. And as I think --

REP. BREWSTER: Thank you, I think my time has expired.

REP. MCCOLLUM: Thank you, Mr. Brewster. Mr. Clinger, you have five minutes.

REP. CLINGER: Thank you very much, Mr. Chairman. I apologize to the panel for not having been here for all of your statements and the questioning period. So some of my questions may be a bit redundant, but I think given the importance of the issue we're addressing here, that is the use of this gas, the quality of this gas, what it does to people or doesn't do to people, I think it's extraordinarily important.

So we had some earlier testimony -- Mr. Sage pointed out where gas had been inserted into that structure over the period of the raid, in about four or five different places, which would seem to me at least to suggest that the level of CS gas that were injected at that time were very, very high. Dr. Marcus, can you make any assessment as to the amount of the -- the degree of CS gas that might have been present, whether the level was -- how high the level would have been.

MR. MARCUS: Well I did submit some -- a report to the committee and I would like to have that made part of the record.

REP. MCCOLLUM: Without objection, everything you've submitted is made part of the record, sir.

MR. MARCUS: Thank you, sir. I did not attempt to determine the actual concentrations because they depend upon two very difficult things to evaluate in addition to the amount and the time. They depend upon the temperature and the humidity. And as I said, both methylene chloride and the powder, the very finely divided powder, tend to fall, concentrate in the lower reaches of any place they are used. If they are used out of doors, they would concentrate in the swells and if they are used indoors they tend to float down into the lower reaches of the building.

REP. CLINGER: So what this would suggest is that the concentration would have been much higher for those least able to absorb that, and that would be the children who would be presumably very low to the ground in that building?

MR. MARCUS: That's correct.

REP. CLINGER: I guess -- I'm not sure that this question has been answered or not, but just for my purposes -- there's been some dispute about whether -- the flammability of this gas -- and has anybody done any testing to determine the degree of flammability or if in fact it is flammable?

MR. MARCUS: Congressman, the only thing I have is the very non- professional videotape right here that my research assistant, Danita Dingman (ph) and I did at the College of Eastern Utah. And it does burn. We put it on-- we initially were going to spray across the flame front of a propane torch, but the material came out in a steady stream to the point where it made that moot. So what we did is we sprayed it on a piece of cardboard, the cardboard being the supporting agent, then took the cardboard, put it into the propane torch flame as an ignition source -- and by the way, a Zippo lighter works just as well -- and the material did burn. No question about it.

When it got too hot for me to hold I tried to shake it to put it out. And you can see that in the video. And through the piece of material in the back of the hood where it continued to burn for a time, when the CS -- or whatever the products of combustion in the gassification time of the cardboard -- were completely exhausted, the cardboard extinguished itself. From that I believe that it is flammable.

REP. CLINGER: Thank you for mentioning Zippo lighters, they are made in my district, so I always welcome the plug. (Laughter.)

MR. : I would like to answer your question also.

REP. CLINGER: Yes, Dr. Marcus.

MR. MARCUS: I have with me a paper written by a Dr. Danto in the American Journal of Forensic Medicine and Pathology in 1987 called "Medical-Legal Challenges. "And he entitles his paper "Medical Problems and Criteria Regarding the Use of Tear Gas by Police. "And as part of his paper he gave three cases. Case two talks about when police come to remove an abusive husband who is intoxicated and they manage to extract his wife, even though the gentleman pointed a rifle at them. Less than 24 hours later the police were recalled because the gentleman, the husband, was yelling and brandishing a shotgun at his neighbors. And a co-worker of the husband tried to calm him down and entice him out of the home to get a beer. And when the police cut the person off who was the co-worker because he wasn't part of the force, gave the gentleman the five minute deadline to come out, and when he didn't they lobbed tear gas shells into his home. They lobbed 40 of them at the residence, some of which bounced off the walls. And when he finally became quiet -- that is the husband -- the police went in to remove him. The house was already burning and he had died from the exposure. In the second case --

REP. CLINGER: Let me -- I've got one more question I want to get in if I may, doctor, before my time is going to be expired here if I might, and that has to do with again -- there has been conflicting testimony as the toxicity of this gas and I guess this is what you were leading to as well. But Mr. Jamar said absolutely not, he characterized it as a relatively benign substance and in no way was it toxic. In your opinion is CG gas toxic?

MR. MARCUS: Yes, there is no question about it being toxic. Every paper that I've read that's independently scientifically produced calls it toxic. The only question is what's meant by that. And these materials are very, very nasty. That's why they are used. Here's a paper just off the top of a stack written by Dr. Beswick (ph) in "Human Toxicology" in '83, and he talks about it. He said before going to the aid of the sufferer you have to decontaminate him -- his eyes. His pressure would rise, if he had glaucoma he might go blind. The skin may get uricemia (ph). And at high concentrations with more moist conditioning blistering occurs. And the cardiovascular system as a result of the fright and pain, there is an increase in blood pressure.

And if he's a cardiac cripple you could cause a heart attack. The respiratory system recovers quickly, as Dr. Parks explained, prolonged exposure can pre-dispose to secondary infections, gross exposure produces edema and death due to asphyxiate. And these would be exaggerated in people who have asthma and bronchitis. The treatment recommended for these is unchanged. The highest -- he talks about the higher nervous system and how that's affected.

REP. CLINGER: So it really is a total misrepresentation to say this is not a toxic substance. And I guess my time has expired.

MR. : Could I just clarify -- in relation to that question, Mr. Chairman.

REP. MCCOLLUM: Certainly. Yes, you may.

MR. : I think it's true to say that everything that we are exposed to is toxic and nobody would actually argue with that. What's at issue here is at what level is the substance toxic. Just to take an analogy, we would all take aspirin for a headache. But if you took a whole bottle of aspirin, in that situation they are toxic enough to kill you. I can't see the argument whereby we sit here and we say CS is toxic. Yes it is toxic, but it's all relative. It depends on how much causes the signs of toxicity. And I think what one of the last pundits has just said gives you a false impression of what we mean by toxicity. It depends on dose.

REP. MCCOLLUM: Thank you very much. Your time has expired, Mr. Clinger. By previous understanding between both sides of the aisle, I will recognize Mr. Scott on Mr. Conyer's time and then the next round we will recognize Mr. Schiff in the absence of Mr. Chabot on his time. So Mr. Scott, you are recognized for five minutes.

REP. SCOTT: Thank you, Mr. Chairman. To begin with, Mr. Brewster wanted a clarification. I'll give one minute to the gentleman --

REP. BREWSTER: Mr. Chairman, I have a letter here from the -- (inaudible) -- Solvents Industry concerning flammability of methylene chloride that I would certainly like to submit for the record.

REP. MCCOLLUM: Without objection.

REP. BREWSTER: The second part, Mr. Marcus, maybe I misunderstood you a moment ago. I thought you said that you worked for the EPA and were here representing the EPA. Apparently immediately after your and my discussion EPA called very quickly and said that you were not

representing the EPA here. Is that correct?

MR. MARCUS: Well I'm not representing EPA in terms of policy or anything I say can't be attributed to them. But I am here as an EPA employee as opposed to a private citizen. I'm getting paid on government time and I'm getting paid by the government to be here.

REP. BREWSTER: You are getting paid by EPA to be here, so you are representing EPA then?

MR. MARCUS: I can only explain that I --

REP. BREWSTER: You are not on a day of leave?

MR. MARCUS: That's correct.

REP. BREWSTER: And they were aware of that and knew about it?

MR. MARCUS: I received a --

REP. BREWSTER: So you are here representing the EPA then? The EPA higher ups told you to be here?

MR. MARCUS: When I asked them whether I should attend, and showed them that I had received the generous invitation, they said by all means.

REP. BREWSTER: Okay, we would like that information, who approved it and that sort of stuff, if we could. Because as I understand it the EPA said no. The second part was did you say there were 600 of you that don't work in the building, that had toxicity to the carpet or something?

MR. MARCUS: No, I said about 10 percent of that, about 60.

REP. BREWSTER: About 60 of the 600 employees? And all of you work from your homes?

MR. MARCUS: No, some of us work in alternate work spaces and were moved out of headquarters into places that were much more tolerable. But I think somewhere in the neighborhood between 15 and 30 people work out of their homes, and it varies depending on whether or not they receive disability.

REP. BREWSTER: And you don't receive disability?

MR. MARCUS: That's correct.

REP. BREWSTER: But you do contract out your services on the side in lawsuits and that kind of stuff?

MR. MARCUS: I have done that in the past, yes, sir. And I would do it if I had an opportunity.

REP. BREWSTER: Your statement -- I'm just now told that we have a fax statement on EPA stationery saying you are not here representing the EPA.

MR. MARCUS: Well what I am saying is that I am here on EPA time as an EPA employee, but I'm not -- anything I say is not policy or represents their opinions.

REP. BREWSTER: And your statement is on EPA letterhead, right?

MR. MARCUS: That's right.

REP. BREWSTER: Thank you.

REP. SCOTT: I would like to ask Dr. Upshaw and Dr. Rice to just comment briefly on the flammability issue, whether or not the CS gas is flammable. The issue is whether or not it could have started -- basically whether it could have started the fire, that's what we are looking at. Do you have a comment to make?

MR. : Yes, I'm not a flammability expert, however, CS is normally generated outside the USA by pyrotechnic devices. In other words, it's a burning grenade. And in that situation the CS does not ignite, it forms a cloud and a fog off that device. So it does not catch fire in that device, which is actually a pyrolysis burning device. And that's the normal method of use in a riot control situation.

REP. SCOTT: And if it's being disbursed without the pyrotechnics, what happens?

MR. : When it's injected from a methylene chloride solution then I believe from the feroground (ph) it contains freon. The methylene chloride evaporates and you have a fog of small particles of CS, free of any of the breakdown products that also are associated with pyrotechnic devices.

REP. SCOTT: And will that cause a fire?

MR. : No, that would not cause a fire. In fact it is deliberately chosen, I believe in the USA, to replace the pyrotechnic device because your buildings have a very high wood content, they are wood frame buildings, and therefore in the past the pyrotechnic devices, they tended to catch fire.

REP. SCOTT: Thank you. Let me get -- I want to get back to the impact that the gas has on children. We heard speculation and theories about how it could theoretically affect children. Do you have any studies or evidence to show what actual impact CS gas has on children?

MR. UPSHAW: I think probably what you're referring to is that there's a paper by (Park and Jyomoto?) in which they describe the accidental exposure of a four-month child in a building to CS. When that report was written back in 1972, we believed that that child was exposed to CS but from a pyrotechnic device. I don't think there's any doubt from that paper that that child suffered. And as Dr. Stone has already said, that child developed a chemical pneumonia of its lung.

I think the important features to pull out of that paper is ultimately that child survived. We are not

sure at this point in time whether that exposure was purely due to CS. As I say, at the time the exposure occurred, it is very likely that that was a pyrotechnically- driven CS device. And the importance of that is that, from pyrotechnic devices, one would also have exposure to a large range of toxic gases that would also injure the lung, purely from the products of the burning part of the munition. So I don't think it's at all clear, certainly to us, that one can ascribe that case solely to CS. Yes, it was a nasty case and the child was admitted to hospital in a poorly state. The important fact is that that child eventually survived and certainly there is no evidence of any long-term effects on that child that we know of.

REP. SCOTT: (Inaudible) -- has widespread use of other cases and we can determine whether or not it has a disproportionate adverse effect on children, Dr. Upshaw?

MR. UPSHAW: I mention that case because that's the only real case that we're actually aware of that is reasonably well documented. As far as we're concerned, the evidence for life-threatening injury to children specifically is limited to that case.

REP. MCCOLLUM: (Off mike.)

REP. SCOTT: Mr. Chairman, I think Dr. Upshaw was answering -- was going to answer the question.

REP. MCCOLLUM: Doctor, do you want to --

MR. UPSHAW: I was just wishing to add that the Hensworth (sp) report, which is the most comprehensive study of CS ever done, in response to the British government inquiry, does mention a case in Northern Ireland of a child exposed in one of the buildings to CS gas that was used at the time in 1969. The child suffered the effects, was removed from the room and recovered very rapidly after being removed, which is the normal response that you see when a human being leaves such an environment.

REP. MCCOLLUM: Thank you, Mr. Scott. Now I recognize Mr. Schiff under that arrangement for five minutes.

REP. SCHIFF: Thank you, Mr. Chairman. Dr. Uhlig, let me say, since you did not receive all of the information about the actual amount of CS gas used in this particular situation, if we get you that information, would you be willing to recalculate your investigation into this matter to see if anything changes your conclusions?

MR. UHLIG: (Inaudible.)

REP. SCHIFF: All right. I think that would be fair to you and to the FBI that used the gas and to everyone that that be done, regardless of whether it changes your conclusion or not.

MR. UHLIG: Okay.

REP. SCHIFF: Let me ask Mr. Marcus; I think that you have clarified that you are an EPA

employee but that you are not testifying on policy matters for EPA here today. As an EPA employee, though, I'd like to ask you this question. Could you briefly tell us what your background is by which you are essentially testifying as an expert on the use of CS gas and its effect?

MR. MARCUS: Well, in the beginning -- as I said, I'm a board- certified toxicologist in general toxicology, which entails very long and involved tests and a retest every five years on the technical knowledge of three different areas. And my professional --

REP. SCHIFF: Do those three different areas include air?

MR. MARCUS: Yes, I did my original work in both my Ph. D. and Masters in inhalation toxicology.

REP. SCHIFF: Inhalation toxicology?

MR. MARCUS: That's correct.

REP. SCHIFF: Thank you.

MR. MARCUS: I'd like to give one quick response. There are more materials and literature talking about children, and I have before me an old report by Cookson (sp) and Nottingham (sp), an Englishman and an English lady, in which they talk about a physician who treated people who were made ill that were exposed to CS gas. And he talks about the mortality rate in adults is about 10 percent while the mortality rate in children is about 90 percent. I have only kept accurate records of the numbers of such cases that I have seen since last June. Since then I have seen seven cases of which there was one child of six years of age who died, one of 15 who survived, one lady of 40 who died and four adults who survived. Now, I don't know enough about this particular gentleman to know precisely what happened, but they're talking about children and being exposed in enclosed areas, bunkers or shelters.

REP. SCHIFF: I understand. Dr. Upshaw and Dr. Rice, I believe the British government still uses CS gas from time to time. Is that correct?

MR. UPSHAW: That's correct, yes.

REP. SCHIFF: In civil matters as opposed to --

MR. UPSHAW: Yes, indeed.

REP. SCHIFF: All right. Is there any guidelines or policies under what circumstances CS gas should be used? And what I'm talking about here is in terms of the environment. That is, is there any policy about it being used outdoors or indoors? Let me just stop there for a minute.

MR. RICE: I don't think we have any strict policy. I think probably what you're getting at is as to the question as to whether CS should actually be used indoors. Most of the CS that's been used on mainland UK has been of pyrotechnic devices, but we certainly do have access to other devices, and

it would be those that would be used indoors purely because of the risk of fire in an enclosed area.

REP. SCHIFF: All right.

MR. RICE: We have no policy that would prevent the use of CS within an enclosed space. I think the important points to make with that in mind is that it's the concentration that one develops in an enclosed space that's certainly very important, and one has to have a view to that, and also the time that anybody in that enclosed space might be exposed to that concentration.

REP. SCHIFF: Dr. Stone, did you want to respond on the question of the use of CS gas, either indoors versus outdoors?

MR. STONE: Yes, I think that --

REP. SCHIFF: (Inaudible.)You need your microphone, Doctor.

MR. STONE: I think the analogy to one aspirin a day is a little misleading, because the point just made is the problem is duration.

Now, I want to emphasize to you, the plan here was to expose people for 48 hours, okay. Now, if you look at the research done by the Hensworth people, in the Hensworth report you'll see that even at relatively low or moderate doses after 40 minutes or an hour, the hours will start to die subsequently of the same illness I've been talking about; namely, a chemical pneumonia. Right? So if you keep the animal in the atmosphere for long enough, it's going to have that reaction. It's not just the dose; it's how long they're exposed. Now, children --

REP. SCHIFF: With duration.

MR. STONE: Exactly. Okay, so as long as the child is breathing that, it's burning its lungs. And that result will be eventually to have fluid in the lungs.

REP. SCHIFF: Dr. Stone, let me ask you this question. I think it's the obvious question. This gas at best is unpleasant. That's its purpose.

MR. STONE: Yes.

REP. SCHIFF: And yet very few people came out of the compound after the gas attack began. Do you have a conclusion as to why that was the case?

REP. MCCOLLUM: Dr. Stone, could you move your microphone closer? A lot of us have trouble with that --

MR. STONE: I'm sorry.

REP. MCCOLLUM: -- I think maybe partly because Mr. Schiff's so far over there.

MR. STONE: Okay, I'm sorry. I think if you -- as you may know, I was on the attorney general's

panel to look into what happened. And as you go through the material, I think that the adults had gas masks. So the adults put on their gas masks as a way of dealing with it. When I spoke to Mr. Jamar at the time, the real question has always been the children. Did the children have gas masks? How were they going to be protected if they didn't have gas masks, and how were they supposed to endure 48 hours of gas? So you have a situation where maybe the adults are protected but actually the children, who are at the greatest risk, are not protected.

REP. SCHIFF: And the children, presumably, particularly infants, can't get out by themselves.

MR. STONE: That is a point, yes.

REP. SCHIFF: Because I didn't give the microphone to you, would you mind repeating again just about dose plus concentration? Would you just mention that again briefly, please?

MR. STONE: Yes. I think the important thing -- and I think that you would agree with me -- that if you keep the animals, which the research is done on animals, in the atmosphere that contains it long enough, they all will develop pulmonary edema and die. Right? So it's not just how much; it's how long. And that's what this calculation that was being described to us earlier is about.

REP. SCHIFF: And pulmonary edema is what, please?

MR. STONE: Basically what happens is this substance is designed to inflame -- its purpose is to inflame tissue. Right? So when you get it in your lungs, your lungs are all this tissue. Right? So it inflames it and then fluid moves across. It's just like getting a blister where you get fluid. So the fluid goes into your lungs and you develop pneumonia, chemical pneumonia. And then you can -- this child that went into the hospital was in intensive care and was in the hospital for 28 days with positive pulmonary pressure and everything to keep it alive. Now, if all those babies had come out, where was the equipment to put them all in intensive care, right? So, you know, there are real questions I have about the children and their exposure.

REP. SCHIFF: My time has expired. Thank you, Mr. Chairman.

REP. : Mr. Chairman --

REP. MCCOLLUM: Mr. Taylor, you're recognized for five minutes.

REP. TAYLOR: Thank you, Mr. Chairman. Dr. Stone, I noticed in your opening statement you used the words "a careful reading of the ATF report indicates," so that leads me to believe you read it carefully.

REP. : Gene, your mike's not on.

REP. TAYLOR: Dr. Stone, in your opening statement, you used the words "a careful reading of the published ATF report indicates. "Does that lead me to believe that you read it carefully?"

MR. STONE: Yes.

REP. TAYLOR: Okay. In your statement, you took issue with the characterization of the shoot-out at Waco as an ambush in part because, and I'm using your words, "only four agents got killed. "How many law enforcement officers, in your expert medical opinion, would have had to have been killed that day to establish that there was an ambush? Would 10 have been enough to satisfy your professional opinion? Would 20? How about all of them? Dr. Stone, I can't believe you said that. Would you walk out of the hospital today and say, "We only lost four patients that we shouldn't have"?

MR. STONE: Well --

REP. TAYLOR: Please, sir.

MR. STONE: Do you want an answer or --

REP. TAYLOR: I'm appalled that a man of medicine would say that.

MR. STONE: -- are you just making a --

REP. TAYLOR: Where's -- you know, you go on to say that you cited evidence that there was no ambush because of the fact that the Davidians didn't open fire as the agents drove out of the driveway. Isn't it possible that the agents -- that the Davidians chose to hold their fire until the guys were out in the open, where they had no place to go? I am truly appalled at so many things you said. You said it was a botched raid and you made the statement that four agents died on the roof. Again, you said you read the report carefully. The report clearly says that two of the agents were killed on the ground.

MR. STONE: Yes, yes, I understand that.

REP. TAYLOR: Dr. Stone, what's your point? Are you on the side of the anarchists? I truly cannot believe that a man of medicine is going to say only four agents got killed. They had children. One of them volunteered for Desert Storm. They left widows behind. They were serving a legal warrant. Have you listened to the testimony? No one's -- a legal warrant. They said they were fired at first. A former green beret from Vietnam said he had never been ambushed that badly in the whole time in Vietnam, had never been that outgunned. Geezum Pete, sir. I will not question your capability, but I will say I am glad you're in Massachusetts and I'm in Mississippi, and my family in particular is 1200 miles at least from your hospital.

MR. STONE: Well, you're entitled --

REP. TAYLOR: I'm going to go on and ask this panel the same question I've asked every panel.

MR. STONE: You're entitled to your opinion, sir. I disagree with everything you said, as you might --

REP. TAYLOR: No, sir. I'm quoting you. Please tell me, what did you mean, that 10 agents had to

be killed, that all the agents had to be killed?

REP. MCCOLLUM: (Off mike) -- answer the question.

REP. TAYLOR: Sure.

REP. MCCOLLUM: Mr. -- Dr. Stone, you may respond.

MR. STONE: The important issue, and the reason this was an issue for me, Congressman, was to get some idea of what kind of people we were dealing with at Waco. That was a very important thing, because the whole task I was charged with by the Justice Department was how do you deal with unconventional groups, right? They considered this an unconventional group, not just a group of criminals. So one of the things we had to consider was how they behaved in relationship to this raid, right? Now, it was explained to me and I will repeat to you what Agent Jamar said, and you can ask him. He said that in the tactical advantage the Branch Davidians had, they could have killed many more agents than they did if they were determined just to kill people. Now, I'm repeating what Jamar told me, which was part of my inquiry during the time I wrote my report. If you doubt it, ask Jamar.

REP. TAYLOR: Reclaiming my time, since there isn't a great deal of time left, I would like to make two observations. The two gentlemen who said that the doses of gas were non-lethal in the amount that they were given happened to say in their own testimony that they are experts from the British army; that's what they do best. I'd also like to make note that the opening statement of Mr. Uhlig in paragraph one, he goes on to say that he is not an expert per se in the use of chemical warfare. I'm making note of all that, sir.

I also want to now ask this panel the same question I've asked every panel, because I'm really curious to see what Dr. Stone's going

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to say. Has anything that you've seen or heard or read justified the murder of four ATF agents by David Koresh and his followers? And Dr. Stone, I'm not a doctor, but it was murder.

MR. STONE: Well, what is the question you want me to answer?

REP. TAYLOR: Has anything that you have seen or heard or read justified the murder of those four ATF agents and the wounding of 20 more by David Koresh and his followers?

MR. STONE: No, I don't think that killing people in that situation is justified. But I think that's totally to mislead yourself and the American people about what the critical issues are.

REP. TAYLOR: Mr. Marcus?

MR. MARCUS: Any time gentlemen as brave as these ATF officers in the field prove themselves to die, it's a tragedy. And there's never an excuse for that -- never.

REP. TAYLOR: Dr. Rice?

MR. RICE: I can see no justification at all.

REP. TAYLOR: Dr. Upshaw?

MR. UPSHAW: I would agree with that. There's no justification whatsoever.

REP. TAYLOR: Dr. Uhlig?

MR. UHLIG: No, there's nothing that justifies that.

REP. TAYLOR: Mr. Parks?

MR. PARKS: Congressman, I think that's a very difficult issue this committee is wrestling with, and I think that's the decision you have to reach rather than me.

REP. TAYLOR: Well, no, sir, I'm going to turn that around. I'm asking for your opinion. You have been called to testify. I don't recall inviting you and I don't know who invited you, but you've had an opportunity to review the testimony and I'm asking your opinion.

MR. PARKS: No, sir, I have not had an opportunity to review the testimony. I believe, Congressman, that the congressman is a former prosecutor.

REP. TAYLOR: No, sir, I'm a former corrugated box salesman. (Laughter.)

MR. PARKS: All right, sir.

REP. TAYLOR: And I take great pride in it. (Laughter.)

MR. PARKS: I apologize.

REP. TAYLOR: If you can't answer a former corrugated box salesman's question, sir--

MR. PARKS: And I'm saying, as a former prosecutor, that a case of murder could be brought. I'm not sure, based on the facts I have heard -- and I've not heard all the facts in this hearing -- that that case could be proved in a court of law.

REP. TAYLOR: Thank you very much.

REP. MCCOLLUM: Thank you very much, Mr. Taylor. Mr. Barr, you're recognized for five minutes.

REP. BARR: Thank you. Mr. Uhlig, could you very briefly describe a ferret round?

MR. UHLIG: The ferret rounds that I've seen pictures of, Congressman -- and it's only been a picture, okay? -- is a device that's about -- when you take a look between 37 and 40 millimeters in diameter -- I've only seen a picture of it, all right? A ferret round apparently has a -- is propelled out of a launcher, as best I can determine, and it's a fairly lethal device. I looked at the manufacturer's literature. Apparently it'll go through three-quarters inch of plywood at 75 feet, break glass at 200 feet. The CS is released at impact with a solid material and the CS is dispensed in a vapor microparticle aerosol. Dr. Upshaw indicated that there was a freon charge in there as well to dispense the CS.

REP. BARR: Thank you. As I understand it, Dr. Stone -- and I think Mr. Marcus, you also testified, and perhaps Dr. Uhlig -- would inflammation in the throat and lungs be consistent with a child being exposed to CS?

MR. STONE: Yes.

MR. MARCUS: Yes, sir. I'd like to expand on that a little bit.

REP. BARR: Well, in just a moment. That was just my question. We've heard a great deal, and I don't know whether you all have followed these, about a young lady named Kiri Jewel. And she came in here -- I think it was on the first day of testimony -- in a very nice, clean, very pretty dress. Her hair was perfect. Her dad was dressed impeccably and was next to her and provided tremendous support to her. And as I sit here and sat there, I have no reason to doubt that what she went through, according to her testimony, was very traumatic, and we all sympathize very much with her.

But I have a picture here of another young girl, nameless, burned so badly, you wouldn't even know her name. She's identified on the medical examiner's photo here as "Doe 57" -- six- to eight-year-old girl; cause of death, asphyxia, inflammation in throat and lungs. She's wearing what probably any six- to eight-year-old girl would wear, some slacks and some running shoes and a pullover shirt, all very badly burned. She wasn't able to be here in a nice new dress and with a parent with her because of what happened on April 19th of 1993. I have another report here of child Doe number 62, burned so badly that we can't even tell whether it was a boy or a girl. We do know that she died or he died of suffocation. We also know that this little child, maybe a year old, was clad in a hooded long-sleeve jacket, a knitted sleeper, a disposable diaper and a loose-knitted shirt. This little baby also was not able to be here so that she could be paraded to show what a horrible person somebody might be. And indeed he was a horrible person. But who's going to speak for the Jane Does and the child Doe that we don't even know what sex they were?

We have heard today from you all about the effects of CS. And the other side can parse words and talk about changing a number here or there. But the fact of the matter is, what was injected into that living quarters, into those living quarters, was at best a very painful substance, and it was injected in there knowing full well that there were dozens of children in there. And we have heard expert testimony -- and the other side may parse words about this as well -- that it is entirely possible that some of the children in there, trying to take refuge in one of the lowest, most secure rooms in the house, may have inadvertently or their parents inadvertently exposed them to death by asphyxiation because of the substance that was injected in there. And it wasn't a small amount of substance. The report of the attorney general says that after they injected all of the CS gas that they had, they sent

out for more, as far away -- they queried every FBI facility in the country from Quantico. "Send us more. "And they interjected more in there, according to this report, through every window in the structure.

The other side doesn't have a lot to say about this. Yet we keep hearing about Kiri Jewel. Well, Mr. Chairman, I think it's time we heard a little bit about the Jane Does and the child Does and the baby Does and what happened to them. And I think it is a very legitimate question to ask, in light of all the information, none of which I believe is secret, that we've heard here today, that we certainly should presume that the FBI knew about and that the attorney general knew about the possible effects of this on children.

And I think it is a very legitimate question for this panel to ask, at least on this side -- that's why was this decision made -- so that hopefully it will never be repeated so we will not have to have pictures like this, which at this time, Mr. Chairman, I would ask unanimous consent be placed in the record. And I'm not asking these be placed in the record as official autopsy photos because we don't have the medical examiner here, but that is what they are purported to be, and an autopsy report on child Doe. And hopefully we will hear more about them, and not just the Kiri Jewels, because they died as a result of what happened. Thank you.

REP. MCCOLLUM: Mr. Barr, your time has expired. Mrs. Thurman, you're recognized for five minutes.

REP. THURMAN: Mr. Chairman, thank you. And at this time I'd like to yield my time to the gentleman from West Virginia, Mr. Wise, who has been doing some of his own work on this issue, and we thank him for his time he's spent on this.

REP. WISE: I thank the ranking member. I just want to say, in response to the gentleman from Georgia, please don't misspeak and think that we don't have a lot to say about it. I do. Initially what I have to say is that David Koresh was such a coward, sir, that he had those children stay in that compound when he could have let them out --

REP. BARR: (Off mike.)

REP. WISE: No, sir, my time -- and that -- so all this talk about the tragedy that happened -- David Koresh is responsible for that child being in that condition that you described so graphically. I would like to just follow up very quickly on that. Dr. Stone -- and my time is brief; I need to ask you to help me out on that -- on page 15 of your report, you state "There's unequivocal evidence that the Branch Davidians started the fire and ended their lives on Koresh's order. "Additionally, on page 20 of your report, you state that the Branch Davidians were willing to die defending themselves in an apocalyptic ending, or kill themselves and their children. Yet we've heard testimony that the fires could have -- the Branch Davidians died (and were?) accidental. Would you comment on the assertion that the fires were accidentally set?

MR. STONE: Let me say this. I was told when I became a member of the panel that there were certain things that would be redacted and there were certain things that one couldn't speak about. Now, I --

REP. WISE: I'm sorry. Who told you that, sir?

MR. STONE: The various people at the attorney general's office.

REP. WISE: Well, could you just point out -- I'm curious --

MR. STONE: I'm not talking about --

REP. WISE: Mr. Chairman, are we instructing witnesses from your side not to --

REP. MCCOLLUM: No, no, I don't believe so. I believe that's an instruction from the attorney general's office.

MR. STONE: Right.

REP. MCCOLLUM: He was on their official review team.

MR. STONE: So it was there. Now, if you tell me that I don't have to adhere to that, I'll be glad to testify.

REP. MCCOLLUM: In front of the committee, I don't think you have to adhere to anything like that. You're a witness here.

REP. WISE: This is already published. I don't understand that.

MR. STONE: Okay, okay. Well, even though it was public, I take confidentiality very seriously. I was told not to do it. If you tell me I can do it --

REP. WISE: Fire away, sir.

MR. STONE: Okay. So they told me that they had listening devices inside the compound, that they could not develop and enhance that sound in time to use it, but the night before, they heard various members of the inner circle of the Branch Davidians saying that "David has decided that we are to step out onto the sun, that we are -- it's going to be really bad, but that's what David has decided. "And I accepted that evidence as unequivocal that they intended to start the fire, yes.

REP. WISE: Thank you. Dr. Rice, let's talk some about the gas. And I understand you're certainly an expert in that. I think we need to get back to how much gas was put into the compound and whether it was lethal. Have you had a chance to review how much was injected into the compound?

MR. RICE: We, as you know from our opening statement, tried to calculate on the information that we had available to us not what

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really happened at Waco but as realistic as we could, given the information that we had from various sources. The outcome of those calculations that we've made suggests that some 2,006 grams of CS were deployed; a total of 38,540 grams of methylene chloride were deployed. We then went on to work out, given certain assumptions which we've already outlined in our statement, as to what the peak concentrations of CS could be within the compound. And our figures suggest that the peak concentration of CS was probably around 100 to 110 milligrams per meter cubed.

We have to say, in addition, however, that these are peak concentration. And given the way that some of the CS was deployed in the building, i. e. the advancement of CEV vehicles towards the compound, the opening of the walls of the compound to inject the CS, that in all likelihood the maximum concentrations actually within the building would be a lot lower than that because the ventilation of the buildings would have been much higher than we actually assumed in our calculations.

REP. WISE: Did your calculations assume one change of air per hour?

MR. RICE: Yes, indeed, they did.

REP. WISE: And is that a conservative measurement?

MR. RICE: That figure we used because we knew from work done for the Hensworth (sp) report that we could actually have -- we actually had figures for that rate of change of air in terms of how the CS cloud would actually decay in terms of concentration. That's the only reason why we used that figure.

REP. WISE: Do those calculations also factor in the 35-mile-per-hour winds?

MR. RICE: No, they didn't.

REP. WISE: And were those winds a factor, in your opinion?

MR. RICE: Most certainly a factor, yes.

REP. WISE: In what way?

MR. RICE: Winds of that speed going through a building -- and I believe that the winds would have actually entered the building through the large holes in the sides through which the CS was injected -- that would just greatly increase the ventilation of the building.

REP. WISE: I'll be back. But in my final question, I would ask, then, given what you calculated, what percentage of that is a lethal dose, a lethal amount of CS? My point is, I think that what you found is that it was far less than what would have been a lethal administration of gas.

MR. RICE: Sure. The peak concentration we're not saying is low, but certainly if that was breathed for a period of 10 minutes, would be significantly below what has been estimated to be a lethal dose

of CS for an exposed population.

REP. WISE: And that is without factoring in the 35-mile-per-hour winds.

MR. RICE: That's without factoring in the 35-mile-an-hour wind, taking into account the volume of the holes that were made in the building, certainly, yes.

REP. WISE: Dr. Upshaw, were you trying to add to that?

MR. UPSHAW: If I may, if I could. What I would like to add is that we estimated that if someone stayed in that building for at least six hours, they would still be some 10 times below what would be an estimated lethal dose. I'd like to take the opportunity to correct a piece of information that is frankly incorrect and has been stated previously, the idea that that cloud would have settled so that persons close to the ground would have had a higher concentration. That is not true. The cloud behaves as a gas would behave in that situation for that particle size. And there is no settling of such a cloud. It moves as a gas cloud would move. And the settling that would take place would only occur if the concentration were so very high, and that it be exceptionally high, that the particles would aggregate and literally precipitate out of the air and fall onto the ground. So as long as those particles are suspended in the air, they would move as a gas cloud would move and mix accordingly. So that information is incorrect.

REP. WISE: Thank you.

REP. MCCOLLUM: Thank you very much, Mr. Wise. Mr. Coble, you are recognized for five minutes.

REP. COBLE: I thank the chairman. Gentlemen, it appears you all bring an impressive array of credentials to this table and it's good to have you all here. I know my friend from New England wants to pursue a question, so in the spirit of generosity, I yield my time to the gentleman from Massachusetts.

REP. BLUTE: Thank you very much, and I thank my good friend for yielding his time. Dr. Stone, I was kind of shocked at one of our colleagues' line of questioning earlier. I thought that you answered it well when you say that the person had misled yourself and the American people as to the critical issues in this case, what they are. I think that's a pretty good description of what a lot of people have been trying to do in this case, the White House included, and some members of this panel. I also thought to try to link you with an anarchist movement -- the last time -- my knowledge of Harvard would lead me to believe there aren't many anarchists at Harvard University.

But beyond that, I think that the overreaction to your testimony is linked to the fact that, number one, you're independent. You were chosen by the attorney general herself, presumably because of your academic credentials and your independence to assess what happened in this case. And frankly, you've come down with a different opinion than others have about the government's investigation. I want to quote you. You said, "I found the government's investigation seriously deficient. "You said that, quote, "The government never gave us a candid account of what went

wrong. "And finally, you welcomed these hearings by saying that "These investigations should dispel bizarre conspiracy theories that have flourished for the past two years. "So let me just say that I appreciate your testimony. I appreciate everybody's testimony, whether they agree with my conclusion or not. And I certainly would (receive?) their independence and their credentials before this committee.

Let me ask you about something you've said about the FBI, because this is a strong statement also. You said, "The FBI's ultimate strategy was to try to force the Branch Davidians out of the compound by threatening the lives of their children. "Now, was this, in your opinion, a conscious strategy or was it a strategy that happened because they left themselves no other options?

MR. STONE: A conscious strategy. I think there was one agent who told me that they were hoping to stir up the maternal instinct of the mothers; that when they saw their children suffering, maybe that they'd get some sense in their heads or something like that. I certainly do not believe that the attorney general thought that the CS gas was as dangerous as I thought. I certainly don't think that.

REP. BLUTE: But you do think that the information she was relying on was flawed, the information that she got on the CS gas.

MR. STONE: Now, this is a problem. Here are people who worked in the context of the Hensworth (sp) report who have been testifying, and they are not apparently as concerned as I am about the long-term -- by that I mean 10, 12, 24 hours of inhaling this gas for a child -- I have no doubt in my mind at all that this would cause a child to get pulmonary edema. So, but you see, there are still people who have a different view, and I believe that's the view that the attorney general was given. I saw the material that she was given and it was mostly from this British source.

REP. BLUTE: And you say that you did not doubt -- and I don't doubt -- that Janet Reno was concerned for the children. I think she was. And you felt that she would never have felt justified in ordering the gas attack if she had understood the risks to them, as I think you and others have indicated. And then you finally say, "I can only conclude that she was misinformed or misled. "Which one do you think is more likely?

MR. STONE: Well, I don't think that she -- what was critical to me, in terms of my particular report, was finding out what had caused her to change her mind. That was absolutely crucial to me, because her first reaction was just right in my view. You don't use CS gas when there are babies, right? So somehow she changed her mind. So I kept trying to find out, what is the information she got that changed her mind? Now, I was unable to get a coherent answer to that question. I was told she talked to this person you're going to talk to, Salem, Harry Salem. I doubt that he has -- well, whatever he will say, you will find out. But I couldn't understand how it would convince somebody who was concerned about the children.

REP. BLUTE: Well, thankfully we're going to have the opportunity to ask the attorney general herself later on about some of the information that she relied upon, how she came to her final judgment and why she changed her mind on the gas issue. Let me ask you another question, and maybe Mr. Marcus could chime in here also, on the issue of the children and gas masks. Now, it's

pretty clearly understood, and I think it's already been mentioned, that children have difficulty -- or is it impossible for children to use a gas mask?

MR. STONE: They don't have enough ventilatory capacity to pull the air through the mechanism that cleans the air out. So they just -- if you see that kind of mask, they just don't have enough.

MR. RICE: Mr. Chairman, may I possibly -- (inaudible) -- statement. During the last war -- I was born in 1939 -- I was issued a British child respirator and carried it to school for several years. Norway and Israel currently produce and manufacture and stockpile respirators for children over the age of two years old.

REP. BLUTE: But do they work effectively?

MR. STONE: No, no. This is -- no, no. This is just a -- he and I agree entirely. For children over two years, if they have the proper gas masks, (they might?). I'm talking about children under two years, of which there were many in the compound.

REP. BLUTE: And are we aware at all, in any of these investigations, yours or the Treasury report, that there were child- sized gas masks in that compound?

MR. STONE: I never was able to find out.

REP. BLUTE: Mr. Marcus, could you comment on that?

MR. MARCUS: Yes. As far as I know, there were none. I just want to introduce for the record the meteorological data.

REP. BLUTE: Your microphone, Mr. Marcus.

MR. MARCUS: I'd like to introduce for the record the meteorological data for that day. I've got this from the U. S. Department of Commerce, National Oceanic, so on and so forth, and it shows that the winds never got to that kind of velocity. And I must commend our British colleagues for suspending the laws of physics. If he is correct -- that is, that you get (dispersed from?) the cloud; it doesn't fall to the ground -- if you have a situation which is static -- that is, there's little to no wind -- you would never have to shoot another round. And I don't think that ever happens.

REP. BLUTE: Thank you, Mr. Chairman.

REP. MCCOLLUM: Your time on Mr. Coble's yield has expired. Mr. Wise, you're recognized -- no, you want to -- Mr. Schumer, you're recognized for five minutes.

REP. SCHUMER: No, go ahead.

REP. WISE: Mr. Upshaw, I saw you --

REP. MCCOLLUM: (Off mike) -- recognize Mr. Wise. All right, Mr. Wise, you're recognized for

five minutes.

REP. WISE: Mr. Upshaw, or Dr. Upshaw, I saw you reaching for your button. I think you wanted to respond to those comments.

MR. UPSHAW: Yes. I just find it unbelievable that the last statement was made. As long as the particles are suspended, they will behave as a cloud. Given enough time, they will aggregate and fall out of the air. But the time frame that we're looking at is vastly different from the -- it's hours that we're talking about for this kind of particle size. The only way in which that changes -- and the documentary evidence is in the Hensworth (sp) report; it was actually looked at in a 20-meter cubed room, which -- sorry, that's metric; 10-foot by 9-foot by 8-foot room. If you fire a 12-and-a-half-gram grenade into that room, it will decay to very low levels within about half an hour if you're changing the air within that room about once every hour. That is documented experimental evidence which is in this Hensworth (sp) report.

REP. WISE: Dr. Stone spoke about his concerns about toxicity for children, and particularly for infants. Given the amount of dosage that you calculated was in that compound at the time, given the winds that were going through the compound, was there an amount that would have been present that could have endangered even infants? I would address that to Dr. Upshaw or Dr. Rice.

MR. RICE: Given the concentrations that we calculate in the decay there, the point is, we don't believe those concentrations were sufficient to cause serious harm to adults or children. I mean, we keep pulling on the children here, and I can see why you're doing it. But the main point of the argument, as far as CS is concerned, is that there is no evidence to suggest that children or the elderly or any other extreme of age is any more susceptible to the effects of the gas. If the concentration is high enough, the effects will be seen in everybody. And yes, I don't deny that they're unpleasant. But the concentrations that we have calculated and the decay of those concentrations, even if a child was in that environment, which I think is extremely unlikely, for the whole period of the gassing operation -- i. e. , six hours -- we don't believe those accumulated doses of CS would have led to any serious long-term harm.

REP. WISE: Mr. Upshaw?

MR. UPSHAW: May I add to that? Because a statement was made earlier which again was incorrect. We were relating the dosage to these children. And the only point that was made was the (respiratory?) rate of these children. The factor that decides how much gets into the child is not the respiratory rate. It's the minute volume. It's the amount of air that that child breathes in every minute and not just how fast it breathes. And that determines the dosage to that child. And the minute volume of a child is considerably less than an adult. So it will take in considerably less than an adult for its given body weight.

REP. WISE: Well, apparently it wasn't -- the gas wasn't all that strong as far as adults went because it didn't drive anybody out.

MR. UPSHAW: Well, I don't think you can actually conclude that. We know -- our calculations suggest what the concentration is. That assumes that they weren't driven out if they were actually

exposed to it. We have no evidence that they were exposed to that concentration for any length of time. They may well have --

REP. WISE: Pardon me, but my time's going to be running short. Is one reason because it was a very big compound? We're not talking about your 10-by-9-by-8 room.

MR. UPSHAW: No, I understand.

REP. WISE: Incidentally, just so the record shows, interestingly enough, one of those children that was found -- perhaps it was a child that Mr. Barr was holding a picture -- was found stabbed. Gas doesn't stab people, does it?

MR. UPSHAW: I think if you look at the autopsy records, without exception, the bodies of all the children were found in the bunker area.

REP. WISE: Mr. Marcus, you said that the winds couldn't have been that high. Do you have any estimate of what the winds were?

MR. MARCUS: Yes, I actually have -- as I say, I have the meteorological data for that day by hour. And the winds from, let's say, 6: 00 were 25 -- gusted to 25 miles or 25 knots; 18 knots, 15 knots, 21 knots, 26 knots. The highest gust was 26 knots.

REP. WISE: At any rate, we're not talking about a static situation.

MR. MARCUS: Correct. But remember, this was inside.

REP. WISE: I understand that. I understand there were holes in this compound after a while, too.

MR. UPSHAW: Quite large holes.

REP. WISE: I want to shift just a second, if I could -- Dr. Rice and Dr. Upshaw, if this is not an area that you feel comfortable talking about, an area of expertise, please let me know. I want to talk about law enforcement's present practices. Following Waco, is it not still the practice of law enforcement to use CS gas?

MR. RICE: In the United States, I believe that's the case. What is an interesting comment that deserves to be made is that the Hensworth (sp) committee recommended that for internal use in buildings that CS was used, grenades should contain no more than five grams of CS. The Waco ferret round, in fact, contains 3. 7 grams, which is even less than the Hensworth (sp) committee recommended would be the maximum to use.

REP. WISE: Well, I just -- I found it interesting. According to the FBI, 867 state and local law enforcement agencies that were contacted still use or maintain CS gas; 688 maintain it in their inventory. The FBI has used it six times in the last five years, not including Waco; three before and three afterwards. The number of law enforcement agencies, local law enforcement, still use CS gas not only in the hostage situation but also as a spray. And I think that ought to be pointed out. Much

of the -- some of what I'm talking about are using it as a spray outside. But so CS gas still seems to be considered by law enforcement to be a viable usage on certain situations. I'll yield back my time. Or I'll yield the balance of my time, whatever might be left, to Mr. Schumer when he (is available?). (Laughter.)

REP. MCCOLLUM: I think the clock has run out now, Mr. Schumer. The red light's on. You didn't quite get back there.

REP. SCHUMER: (Inaudible.)

REP. MCCOLLUM: Do you want to ask a question or not?

REP. SCHUMER: Well, I have my own time coming.

REP. MCCOLLUM: That's fair enough. I'll be liberal enough with it. Mr. Blute.

REP. SCHUMER (?): (Off mike.) (Laughter.)

REP. MCCOLLUM: Come on, now.

REP. BLUTE: Thank you very much, Mr. Chairman. Let me just ask a few more questions about the gas and then ask some questions of Mr. Parks. It's my view that -- and I agree with what's been said by Dr. Stone and others that -- and let me quote Dr. Stone -- "Given my current information about CS gas, it is difficult to understand why a person whose primary concern was the safety of the children would agree to the FBI's plan. "

And I think that's -- to me, that's fairly clear that in any other type of law enforcement situation, if you have a hostage situation where one kidnapper, two kidnappers had taken hostage of an entire family of five or six children, it seems to me that the local police's motivation would be to do anything but to endanger those children. That's my understanding of how law enforcement, at least at the local level, reacts to these types of situations. And I think that perhaps the religious component of the Branch Davidians and a kind of misunderstanding and a group analysis that they were all Branch Davidians so that they were all somehow guilty of something and worthy of gassing and attacking, that maybe that had part of the issue there.

Let me turn to Mr. Parks. Mr. Parks, you're an expert in the body of international law relating to armed conflict, is that right?

MR. PARKS: That's correct, Congressman.

REP. BLUTE: And you are a member of the United States delegation to the international conventions at which these types of laws with regard to war are made?

MR. PARKS: That's correct.

REP. BLUTE: What are the current treaty obligations of the United States with respect to this CS

gas in military conflict?

MR. PARKS: I would stress -- it's a point that the Congress made -- the current obligations do not include the 1993 Chemical Weapons Convention which made some slightly different rules with regard to riot control agents. The United States is bound by the 1925 Geneva protocol which basically prohibits the first use in war of chemical weapons. And as I stated previously, the United States does not regard riot control agents, including CS, to be a chemical weapon.

REP. BLUTE: So from your opinion and the Department of Defense's opinion, this gas is not prohibited.

MR. PARKS: This is not considered a chemical weapon.

REP. BLUTE: Well it's been -- we've heard from a number of people that perhaps it is prohibited. I understand that it may be a technical problem there as to whether it's prohibited. You're saying it's not, others I think have testified that it is prohibited. Does anybody else on the panel know about that aspect of this, whether our treaties prohibit the use of CS gas?

MR. : All I can say is that UK takes the same view as the U. S. It's permitted for the use in civil disturbances.

REP. BLUTE: But not military?

MR. : Oh, I'm sorry, it is used for military purposes as well.

REP. BLUTE: And there's no prohibition to your knowledge in the military --

MR. : I can't answer.

REP. BLUTE: Okay.

MR. : Congressman, if I can clarify that. There is a policy restriction on the use of CS at combat for the very simple reason that if you were to use CS on the battlefields, and the enemy were to observe it's being used say through binoculars rather than someone inhaling it or some sort of detector, they might perceive that you have used a chemical weapon and escalate the level of the conflict with chemical weapons.

REP. BLUTE: So it's more of a tactical issue.

MR. : It's a policy decision --

REP. BLUTE: A policy decision so as not to escalate --

MR. : Which is contained in Executive Order 11850 that's been in effect since President Ford's time.

REP. BLUTE: I'm glad you cleared that up.

MR. : Can I clarify one other thing?

REP. BLUTE: Sure.

MR. : I would point out that even under the 1993 Chemical Weapons Convention the policy would be that we can use these in other military operations short of actual armed conflict, peacekeeping operations such as Somalia or Haiti, rescue operations and things like that. So our policy is quite similar to that for our law enforcement operations.

REP. BLUTE: All right, let me ask you one other question. In your experience and in your knowledge with the DOD, has -- and I know we've had testimony from a number of people that the military uses this gas to train on a regular basis, is that correct?

MR. : I was trained on it 30 years ago so I would have to say --

REP. BLUTE: Every one that has testified, even non-military, said that they were trained on it. My question is to your knowledge has any soldier in training ever died as part of that training with CS gas?

MR. : I don't have that knowledge, I can't say.

REP. BLUTE: Thank you very much for that. Let me ask a more general question of the panel. We've talked about the fact that there were children inside the compound and that perhaps this is a very good reason not to use it. Let me ask Dr. Rice and Dr. Upshaw if you agree with that, that in a situation, a law enforcement situation where there are children, particularly younger children involved, would you advise law enforcement not to use this gas?

MR. RICE: It would depend entirely on the operational situation. It is a balance of risk and consequence. And if the child was deemed to be of greater risk from the consequences of not using CS, I would advise to you it if I felt it would resolve a situation.

REP. BLUTE: But in this case this was not a pure hostage situation. We've heard testimony to that extent. Some people think it is a pure hostage situation. Clearly there were opportunities for some of the Davidians to leave the compound on their own and they chose not to, for religious reasons, because they believed Koresh. For whatever reason this was not a pure hostage situation. So how do you use a CS gas to drive people out of a place that they don't want to be driven out of, who are potentially innocent, children, some of the women, some of the older people?

MR. RICE: I can't answer that. All I can tell you is that the concentration of CS would drive people out of those buildings. The operational decision to use it is something I can't comment on.

REP. BLUTE: So what you are saying is that the effort to drive the people out of the compound was unsuccessful, obviously because if you believed that if they were successful, the people would have had no choice but to get out of there?

MR. RICE: They should have moved out of those buildings. But in terms of--

REP. BLUTE: After six hours of building exposure.

MR. RICE: The first exposure would have moved them from the room. However, we should clarify what we mean by moving them out. They could have moved to another part of the same building where the CS concentration was lower. They didn't need to come out of the building as long as they moved out of that cloud of CS smoke.

REP. BLUTE: Well I would like to thank the panel for their testimony. I think it's been very informative and very important. Thank you very much.

REP. MCCOLLUM: Ms. Lofgren, have you been recognized? I don't think you have. Would you like five minutes? I recognize you for five minutes.

REP. LOFGREN: I've read through the material and the scholarly arguments, but I am trying to -- is CS gas what was used on college campuses in the late 60s and 70s in the demonstrations? Isn't that the same substance?

MR. RICE: Perhaps I should answer that purely anecdotally. I was at Berkeley between '63 and '66. (Laughter.)

REP. LOFGREN: So you have personal experience with the substance?

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MR. RICE: I certainly saw what went on. My belief is that at that time CN was being used.

REP. LOFGREN: But wasn't there a switch to CS late in the 60s because of the lesser risk?

MR. RICE: I have no knowledge when the switch was made within the states or when a particular force in the United States switched from CN to CS.

REP. LOFGREN: But in law enforcement there was a switch from CN generally to CS because it's less hazardous, isn't that correct?

MR. RICE: That is correct.

REP. LOFGREN: One of the questions that has been asked to me, and I am pretty sure the answer is there is no such thing, but I promised I would ask it anyhow. Some people have said well isn't there some gas that could have been used that rather than creating an adverse reaction that would actually render someone unconscious and resolve the situation in that way, is there any gas that is currently available or being developed that could be utilized in that way?

MR. RICE: That's the answer in an ideal world, but currently there is no such gas. None being

developed to the best of my knowledge.

REP. LOFGREN: All right. The final question I have is if the choice was between the use of CS gas which is non-lethal and the next alternative, which appeared to be a more aggressive, perhaps arms of some sort, wouldn't that affect your choice on the use of this non-lethal weapon?

MR. RICE: In my personal opinion, yes it would, very much so. I would always go for the non-violent use.

REP. LOFGREN: Thank you. I would like to yield the balance of my time to Mr. Schumer.

REP. SCHUMER: I thank you, Ms. Lofgren, and I thank the witnesses for bearing with us on into the evening. I would like all the witnesses -- I have a few quick questions about this -- and there may be nothing involved here at all, but I beg your indulgence. And so I am going to ask you a series of six or seven questions. If the answer is no, do nothing. This is for the entire panel. But if the answer is yes, please raise your hand. Okay?

And I want to ask you if you've ever discussed the testimony you gave today or discussed anything relative to this hearing or were assisted in any way with this preparation by any of the following persons, okay. First, a representative of an organization called "Failure Analysis Associates." Has anyone talked to anyone from that organization? You have, sir, okay. I'll follow up.

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REP. MCCOLLUM: For the record --

REP. SCHUMER: For the record, Dr. Stone has raised his hand. To John Mowali (ph). Okay, the record will show no one has raised his hand. Anyone known to you to be a member of an organization known as the "Waco Team." No one has raised his hand. Mark Barnes (ph). No one has raised his hands. Jim Warner. No one has raised his hand. Fran Haga. Okay, Dr. Stone. And any representative of the National Rifle Association. Dr. Stone. Okay, so we can take it that none of the other witnesses have talked to any of those people. All right, thank you. And I'll come back to that in a little bit.

My next question is just related for Dr. Marcus. I understand that there is some dispute about whether you are here as an EPA employee or not. And in fact I would like to introduce without objection, because your testimony came on official EPA stationery, a letter from Robert -- I don't know how to say his name either --

MR. MARCUS: Perchasepi (ph).

REP. SCHUMER: Perchasepi (ph), who is just simply saying that you are not appearing as a witness on behalf of EPA.

REP. : (Off mike)

REP. SCHUMER: Just on -- if I get an extension of the time that's fine with me.

REP. : Certainly.

REP. MCCOLLUM: I would like to know the date of the letter and the time you received it.

REP. SCHUMER: July 26th, today, because we asked officially after we saw the testimony.

REP. MCCOLLUM: Would the gentleman yield on his reservation?

REP. SCHUMER: It's really not a reservation.

REP. MCCOLLUM: Well you asked to be -- I just want to clarify that I've read the letter and there's nothing in the letter that inconsistent with what Dr. Marcus had to say himself about the fact he's not appearing officially for EPA. They have not said he couldn't appear here and they have not said that he did not have the right to appear here and be paid for it while he is here, which is what he said he was. They have simply said he is not representing official EPA -- because it didn't go through the screening procedures or whatever -- his studies or his analysis, I don't know, whatever. And that's fine. And without objection I would --
I believe I have a right to object to find out the date and the authenticity of the letter. It came today -- can you tell me about what time?

REP. SCHUMER: 7: 13.

REP. MCCOLLUM: P. M. ?

REP. SCHUMER: Yeah, it's 19: 13, so it must be seven -- it's on the fax machine. It must be 7: 13 this evening.

REP. MCCOLLUM: And that's because you requested it, the Minority requested it?

REP. SCHUMER: No, they were watching and they sent the letter over at their own volition.

REP. MCCOLLUM: Without objection you have an additional minute.

REP. SCHUMER: Oh, it's more than a minute, Mr. Chairman.

REP. MCCOLLUM: I've been watching it, it's amazing how fast these things can be done.

REP. SCHUMER: Let me just say before Dr. Marcus -- or Mr. Marcus -- excuse me --

REP. MCCOLLUM: Can we have some order please. Order in the House.

REP. SCHUMER: Thank you, Mr. Chairman. I understand that your work for the EPA's office is in the area of drinking water, is that correct?

MR. MARCUS: Yes, sir.

REP. SCHUMER: And have you ever published any scholarly article or anything else on CS gas?

MR. MARCUS: I have not.

REP. SCHUMER: You have not. Okay, thank you. Now my next questions are for Dr. Rice and Dr. Upshaw. And let me just ask you a series of them and let you each answer them seriatim because -- and I just want to say one thing -- I admire your composure. I can sort of tell by your facial expressions that when some of the other witnesses are speaking you would like to scream and your British composure is something that I very much admire and aspire to. (Laughter.) Just aspire.

But let me ask you these three questions. First, was CS gas a good safe choice to use at Waco under all the circumstances? Were children --

MR. RICE: Yes.

REP. SCHUMER: No, I'll do them all three at once and you can go on a little bit. It's a technique each side has picked up here as a way of extending our time. Was CS gas a good safe choice. Second, were children or adults likely to suffocate as a result of the use of CS gas? And is it likely that either CS gas or any agent used as a vehicle for CS gas caused or contributed to a fire? The third one is the most important question because I don't know if that has been asked. It hasn't been while I was here. And who would like to go first? Dr. -- we'll do it in alphabetical order, Dr. Rice.

MR. RICE: The answer to your first question is categorically yes, it's the safest to use, having made the decision that you wanted to use a tear gas. The second question -- can you remind me of the second question.

REP. SCHUMER: The question is were children or adults likely to suffocate as the result of the use of CS -- excuse me -- were children or adults likely to suffocate as the result of the use of CS gas?

MR. RICE: Based on the analysis that we've done on the situation, the concentrations we believe that were within the compound, no. And the third question, can you remind me of that.

REP. SCHUMER: Is it likely that either CS gas or any agent used as a vehicle -- and I wish we could call it CS tear gas. You know gas, ever since World War II, has a sinister notion to it and CS gas sounds somewhat eery, mysterious. If we called it CS tear gas, which

is what it is, it would -- for the audience and people out there in America just catching a sniff of it, it would sound less ominous because most people are familiar with tear gas. But is it likely that either CS tear gas or any other agent used as a vehicle for CS tear gas caused or contributed to a fire?

MR. RICE: I'm not a fire expert, but from what I understand from the toxicologists, CS and methylene chloride, which I think are the main compounds to be looked at here, no.

REP. SCHUMER: Okay, and Dr. Upshaw.

MR. UPSHAW: The reply to your first question --

REP. SCHUMER: Yeah, I think you have to --

MR. UPSHAW: The reply to your first question is unequivocally yes. The second, not at the concentrations used. Again I'm not an expert on fire hazards, but at the concentrations used I believe that not to be the case. And in particular that's the reason why CS was formulated in methylene chloride, to minimize the fire risk.

REP. SCHUMER: Thank you. Thank you, Mr. Chairman.

REP. MCCOLLUM: Thank you, Mr. Schumer. Let's see who was -- Mr. Mica, you are recognized for five minutes.

REP. MICA: Thank you, Mr. Chairman. Dr. Stone, you participated in some of the review, this document produced by the Department of Justice I believe. You have some pretty outstanding credentials. I'm just wondering if you were aware also of some of the previous history in the government making decisions to use CS gas for children. I have Department of Justice Crises Center Log from Ruby Ridge eight months before the Waco disaster that shows that the Department of Justice -- and this is a copy of it and I will submit it for the record -- and it's -- I guess Mr. Larry Potts is in charge. And the comments here are the deployment of gas into the residence presents a high degree of risk to small children. There may be a one year old baby inside.

So we had had a history of using this where there were children in fact. Is that correct? Were you aware of this?

MR. STONE: Yes.

REP. MICA: The other thing that will haunt me I think if I live to be 100 years old, of course I'm most disturbed by the loss of the agents and I saw them shot in this situation, the first situation. But none of the folks who were Davidians worked for the federal government. But somebody in the federal government made a decision to use this gas. And I also read from the report and it says it's impossible to know how many of the persons inside the compound inhaled the tear gas because the last gas insertions were made nearly an hour before the fire ended. The lapse of time would have been sufficient for the CS gas to have dissipated from any of the bodies it might have been present in earlier.

I read the autopsy report and that's really what haunts me and what Mr. Barr talked about. The autopsy report is page after page of children, one year old child suffocated in bunker, one year old baby -- another one suffocated -- and their remains were so destroyed they are identified by Doe 69. Five to six year old girl, body found in bunker. It goes on and on, children -- a baby girl not even the age -- pages of this that a decision of somebody to use this gas -- and I'll never know, maybe we'll never know if they died from inhaling the gas, but nonetheless they died. Should we have a policy dealing with the federal government using this type of gas where there are children involved?

MR. STONE: Yes, I certainly think we should. I think that if we're non-political about it and we get out of this adversarial mode, I guess I think our military believes what the people from England are saying to you today. I think that's the line you are going to get from them. I think the military thinks this is a very valuable weapon. They are assured by the police. The British use it to disburse mobs. They have -- the police use it now all the time. I think it's very important that we get some good solid evidence about children. I don't think we've heard any solid evidence about the risk to children. I think if you would get the National Academy of Science or someone to answer this question so that the FBI, when I push them -- and I consider Mr. Jamar an incredibly conscientious man -- and when I pushed him and pushed him about the children, he practically became tearful and then he said well the Army told me we have the best people, right. So I think it needs to be clarified what we --

REP. MICA: We should have a policy.

MR. STONE: We should have a policy.

REP. MICA: Particularly children. I haven't even gotten into the women or other folks that may have been innocent.

MR. STONE: Right.

REP. MICA: I thank you and I promise to yield to my colleague, Mr. Schiff, he was gracious to me yesterday. Thank you.

REP. SCHIFF: Thank you. Two things, I thank the gentleman for yielding first. For anyone who suggests that government employees don't work late, I think that we should proudly refer them to the Environmental Protection Agency's employees stayed in the office past seven o'clock, at least when there are Congressional hearings going on that they might be concerned about.

Let me ask more seriously, at the very least we know this gas is a heavy irritant. And yet I believe that the plan was to insert this gas for 48 hours. Does anyone on the panel know, and can say briefly, why was this gas going to be inserted for 48 hours? Why did they expect it wouldn't work right away to get people out? Can anyone explain that? Dr. Stone?

MR. STONE: It's my understanding that they thought that there were enough gas masks, not counting the children, that they may be able to protect themselves. And after a while the canister doesn't work so you have got to get another gas mask and so forth, so they thought eventually the place would be so contaminated they would have to come out.

REP. MICA: Did they expect, even with gas masks, did they expect people to start coming out in the first hour, or two hours or three hours, if you know?

MR. STONE: Yes, the plan was that we are going to start injecting the gas at one place. The military told them -- they told me -- that we should inject it everywhere at the same time. And so they developed this fall back plan that they start to inject the gas, if they shoot at us, then we'll inject

it in everywhere. Okay? So then they started injecting it everywhere and they quickly used up everything they had trying to inject it in. And according to Mr. Jamar at least, he would never have ordered it if the wind was blowing. That's why if the wind is blowing is a big question, because it wouldn't have made sense to do this with the wind blowing. But for the first two hours the wind wasn't blowing.

REP. MICA: Were they expecting people to come out early -- apparently some.

MR. STONE: Yes.

REP. MICA: And people did not come out early?

MR. STONE: Right.

REP. MICA: Then they just kept up with their plan anyway?

MR. STONE: Well at that point they -- as they report -- they were shot at and so they moved to this next plan of putting the gas in everywhere.

REP. MICA: My time has expired. Thank you, Mr. Chairman.

MR. UPSHAW: Mr. Chairman, I wonder if I could comment on that?

REP. MICA: You may comment, Dr. Upshaw.

MR. UPSHAW: Just for the record, my understanding of the situation in Waco was that the gas was not put in continuously, it was put in in four discreet shots, at about one to one and a half hour intervals, and there were gaps in the period. And according to our calculation it was between a half an hour and one hour when the gas concentrations, or the CS concentrations, had dropped to very low levels indeed. So it was a paused input, not a continuous input. Just for the record.

REP. MCCOLLUM: Dr. Uhlig, you want to comment as well for the record. We can't have everybody doing it, but once we get this started I think all of you are fair game. Go ahead.

MR. UHLIG: I would like to make a comment. During the time between the major gas injections, my understanding is that the ferogrounds (ph) were continued to be fired so there would be a continuous injection of the CS methylene chloride. And if I may make a clarifying point with Congressman Brewster, Congressman Brewster, I understand now where you are coming from. You made the statement about halides (ph) being flame retardants. There are two types of chemical compounds, one organic and one inorganic. You are correct, inorganic halides (ph) are flame retardants. However, organic halides (ph) do burn like the dickens, with the exception of some such as carbon texachloride (ph). So there's two different compounds involved here, sir.

REP. MCCOLLUM: Thank you, Dr. Marcus, since everybody has jumped in, you may.

MR. MARCUS: Very briefly, I just wanted to say that this material causes adults to vomit when it's

in high concentration. It also causes children, even young children, to vomit. If they are small and they are knocked down by the gas, or in this case the powder, the chance of aspirating their own vomit is very high, and this causes an aspiration pneumonitis which cannot be differentiated after all is said and done from what would have occurred if it was CS alone.

REP. MCCOLLUM: Thank you very much. As I understand it, the minority does not have any more right now, wants to pass, only has one questioner left, so I will recognize Mr. Ehrlich for five minutes.

REP. EHRLICH: Thank you, Mr. Chairman. I am going to yield the majority of my time to Mr. Shadegg. I have one question. And Mr. Wise asked a very specific question. Mr. Blute asked a fairly general question, and I want to really rephrase Mr. Wise's question and get if I can a very short, concise answer from each of you. I suspect that I know what the answer is going to be, but with respect to this entire issue, I'm not on any particular side, and we've made that point time and time again. My purpose in this hearing is to come to some definitive conclusions in my own mind so that I can tell the people I represent in Maryland what I think, and that is the reason I am asking this question. There are no sides.

And my question is this -- in your view, and we've all laid a great foundation -- you're all experts -- was it appropriate or inappropriate -- and this is a very subjective question -- I want the factors to be taken into account, the factors that were present in Waco -- was it appropriate or inappropriate to use CS gas in the levels you understand were utilized in light of the totality of circumstances, knowing one, infants were present, and two, the agent was to be delivered, at least to some extent, within confined spaces. It's a very specific question, I would ask for a very short answer from each of you -- appropriate or inappropriate? Dr. Stone.

MR. STONE: I think not appropriate.

REP. EHRLICH: Inappropriate.

REP. MCCOLLUM: Please, before you go on, that could not be heard by anybody --

MR. STONE: Okay, I think it was not appropriate.

REP. EHRLICH: Thank you, Dr. Stone.

MR. : I think it was definitely not appropriate and I just want to show the committee -- this is a book called the Harriet Lane (ph) Handbook. It's put out by Johns Hopkins University and it really is put out because pediatrics is a different kind of science. It's a manual of pediatric house officers. And if the gentlemen from England were correct, we wouldn't need a manual such as this.

REP. EHRLICH: Thank you, sir. Inappropriate. Dr. Rice.

MR. RICE: It's a tough question to answer. I think if you can create the concentration in the building that has the desired effect, then yes it is appropriate. But it is an operational consideration and it's a balance between risk and benefit and I don't think there is a simple answer to your question.

REP. EHRLICH: Thank you, sir. A very honest answer.

MR. : I would agree entirely with that, it's a balance of risk and benefit and it's an operational decision at the concentrations that you would require to receive in order to move people out of those buildings.

REP. EHRLICH: Thank you, sir. Dr. Uhlig.

MR. UHLIG: I would say no, judging from a chemical standpoint. And from the reaction of my research assistant when she accidentally got into contact with the stuff. I don't think it's appropriate.

REP. EHRLICH: Thank you, sir. Mr. Parks.

MR. PARKS: Congressman, if you saw my high school and college chemistry grades, you would be assured I am not an expert on how to employ --

REP. EHRLICH: I assure you mine were far worse.

MR. PARKS: And I can't answer this question.

REP. EHRLICH: Thank you, sir. I appreciate each of you giving an opinion as to really what is the bottom line issue with respect to this hearing. Thank you very much. I yield my time.

REP. SHADEGG: I thank the gentleman. Dr. Stone, you were asked by the attorney -- Deputy Attorney General -- to help prepare this report for the Justice Department, correct?

MR. STONE: I think what you are holding up is the investigator's report. That was done by the Justice Department. Then there are these smaller reports which I was--

REP. SHADEGG: But it was the Justice Department that asked you to prepare the report?

MR. STONE: Yes.

REP. SHADEGG: And I believe in fact that the Deputy Attorney General knew you well because I believe you two were on the Harvard faculty together.

MR. STONE: Absolutely, yes.

REP. SHADEGG: I'm disturbed that in your written statement you report that when you requested documentation about CS gas from the Justice Department you were given, and I quote, "ambiguous and irrelevant material." Now do you think the Justice Department was withholding the information you needed to do the job they had asked you to do, or and maybe equally disturbing, do you think that the Department had not done its homework so that ambiguous or irrelevant material was all they had?

MR. STONE: I asked -- as I said earlier -- I was concerned about what information had convinced Attorney General Reno to change her mind. So I was told that she had had a conversation with Harry Salem and that had been important. So I said would you please tell me what she was told. I then got a document that was incoherent, incomprehensible, and I cannot tell you -- I've been asked by many people, well what did it say -- it doesn't say anything.

REP. SHADEGG: Okay, thank you. And finally, Doctor, I know you've been here a long time as we all have, but you've studied this matter intensively at the request of the Justice Department and you've I am sure given it a lot of thought. Because the central purpose of these hearings is to make sure that we've learned as much as possible from the mistakes that were made. Let me ask you what one or two points it would be most important for all of us to learn from this terrible tragedy.

MR. STONE: Well I think the first most important point ought to be that we have different rules of engagement when police or other law enforcement are dealing with children. There ought to be a red flag go up. Whatever we do ordinarily there are different risks and benefits when there are children. That's the first thing we ought to do. The second thing we ought to do, since as Mr. Wise has -- Congressman Wise has pointed out -- since police all over America are now using CS gas, we ought to find out whether it really harms children in the ways that I think it does. Because if we don't, if even one child more dies from this, and I've read reports of children who died from it -- of children who died from it in other countries -- and there were actually studies, although it was said that they were not physicians, one of them was my colleague, Dr. Shue (ph), who is a very well trained physician and MPH. So I believe this is dangerous to children. I think we should clear that up.

The next thing I think we need to know is this relationship between the Attorney General and the FBI. How does that work? Who in the Attorney General's office is coordinating this stuff with the FBI? In my own reaction in both situations I found the people in Treasury, when they first heard what I think is an incredibly incompetent overreaching plan, the first response was they said no. Then they changed their mind. I would like to know why they changed their mind. It's the same thing that Janet Reno, when she was given this plan of the tank and gas attack, she said no. And then somehow she changed her mind. So how these decisions were made and how they will be made in the future it seems to me is absolutely critical.

REP. SHADEGG: Thank you very much, Doctor.

REP. MCCOLLUM: Thank you. The time has expired. Mr. Buyer, you are recognized for five minutes.

REP. BUYER: Thank you, Mr. Chairman. I would like to move into the Justice report itself, on page 270. It discusses -- actually excuse me, on page 266 -- it discusses an April 14th meeting in the Justice Department. By this I take it there was -- that this was also written based on an interview of the Attorney General. At the bottom it said the Attorney General -- this is in a conversation with Dr. Harry Salem about the effects of CS gas on children, pregnant women and the elderly. The last sentence -- she -- the Attorney General -- recalled that although there had been no laboratory tests performed on children relative to the effects of the gas, anecdotal evidence was convincing that there would be no permanent injury. Of course that is based on the assessment from Dr. Salem, who

must have been present to say here's what the effects of the gas would be. Would you agree with that statement?

MR. STONE: I don't agree with it. As I've said repeatedly, I would be concerned that the children would have the long term risk of pulmonary edema (ph).

REP. BUYER: Right. The reason I am going to go down the line here real quick, because we have Dr. Harry Salem, who obviously -- we've got a very tight meeting here -- we've got the meeting with Reno, Mr. Hubbell, Mr. Kenney (ph), Mr. Quantro (ph), along with Director Sessions, the FBI representatives, Clark, Grope (ph), Potts, Wilson, Rogers, Betz -- it's a very small group of individuals and Dr. Salem. So let me go down the line here, you don't agree with the recommendation of this doctor giving advice to an Attorney General that has to make a very important decision. Dr. Marcus.

MR. MARCUS: I know Harry Salem and he works for the military, he has most of his professional life at the Edgewood Arsenal. I don't think it was appropriate -- I assume he shares the same opinions as our gentlemen friends from England.

REP. BUYER: Alright, well let me go down the line, they can -- (inaudible) -- recommendation he gave the attorney general.

MR. UPSHAW: With all the evidence we have, I will reiterate, we do not have any evidence to suggest that young children or the elderly are any more --

REP. BUYER: Wait a second, the question I had to ask is very specific here, because we had the attorney general recollecting advice that was given to her by Dr. Smith. And that advice was this, sir, she recalled that although there were no laboratory tests performed on children relative to the effects of the gas, there (is ?) antidotal evidence was convincing that there would be no permanent injury.

MR. RICE: On the basis of available evidence, she has a point. I don't see anything to disagree with that advice.

REP. BUYER: Okay.

MR. UPSHAW: On the basis of the available evidence, I would agree with what his advice was.

REP. BUYER: Okay.

MR. : I would disagree, simply because of the fire conditions that existed and the formation of the decomposition products of CS.

REP. BUYER: Well, we've got the experts disagreeing. I think that -- I think it's a really important point. You may disagree here, but I guess now I'm confused at the moment, because we had an answer to a question here from Mr. Ehrlich who went right down the line, and all of you went down and said no, no, no, we shouldn't be using it against children. The two gentlemen here in the middle

have said, well, this is really a balancing question, risk versus benefit. Well, if we're talking about a balancing question of risk versus benefit, it throws me then into this realm of, I agree with you, sir, it's pretty obvious that the gut reactions from the attorney general, Ms. Reno, were pretty accurate. She didn't really want to do this. Somehow she gets convinced or pressured to do this. I don't know. We'll have to find out; we'll have to ask her.

But then when she finally makes this decision to go ahead, and she's going to make this decision to use the gas, and it's that risk- benefit analysis, I guess, to use them on children and the elderly, on the 18th, she then -- she works for somebody, doesn't she? She works for the President of the United States. So then she says, well jeez, I'd better tell my boss about this risk-benefit assessment. So then on the 18th, since she's made this decision, she then has to sit down and discuss the plan with the President of the United States who also, I'm sure, could say yes or no to the plan of operations. Somebody always works for somebody in our government. We're always accountable to the people. That's what's magnificent about our system of government. And we'll have to wait until we get the attorney general in, but Dr. Stone, we will move forward on your mystery question. Because it's a mystery to me, and I think it's a mystery to a lot of the American people, because the buck doesn't stop with Janet Reno, it stops with the president. I yield back the balance of my time.

REP. MCCOLLUM: Any other member on our side wish to use that time? Mr. Zeliff, would you like to?

REP. ZELIFF: Sure. First of all, I think we know some information on Dr. Stone and where he's from. And a few questions were asked. Dr. Rice and Dr. Upshaw, I want to just ask you, were you involved in any consulting with the Justice Department or anybody to do with Waco whatsoever, or did you just come over here on your own?

MR. UPSHAW: No, we didn't come over on our own. We were actually invited. The Department of Justice invited us to come.

REP. ZELIFF: The Department of Justice?

MR. UPSHAW: That's right.

REP. ZELIFF: Did they pay your way?

MR. UPSHAW: They're paying -- there's a contract with the Defense Research Agency, which is the organization for which I work for. I'm being paid in a proper and formal sense.

REP. ZELIFF: Okay. So are you being paid to give testimony by the Department of Justice?

MR. UPSHAW: I'm not being paid to give testimony. I'm being paid -- no, there's a contract with my organization, the Chemical Defense Establishment, for my presence here as a toxicologist. I'm giving my time and that is being formally paid for.

REP. ZELIFF: Okay, I understand. Thank you. And Dr. Stone, and just to put it out, you were invited in. Why were you invited to participate in this review?

MR. STONE: Here?

REP. ZELIFF: Right, no not here tonight, but why were you invited to be a part of the review of what happened at Waco? Why do you think you were particularly chosen?

MR. STONE: I think I was chosen -- I know I was chosen as a last-minute substitute, because the person that I had recommended was someone that the scientologists objected to.

REP. MCCOLLUM: Mr. Zeliff, Mr. Buyer's time has expired. I yield five minutes to Mr. Shadegg.

REP. SHADEGG: Thank you, Mr. Chairman. Let me begin by joining Mr. Schiff. I've got to say, I thought I had heard it all when the Justice Department was able to flash over here within minutes of testimony in this hearing, a press release responding to testimony in the hearing. That happened during the working day. I was impressed. But I will tell you, today we have the Environmental Protection

Agency, at 19 minutes after 7: 00 p. m. , flashing over here, not at your request -- not at the minority's request, but on their own because they happen to be sitting back watching TV, watching these hearings, glued to the TV, 19 minutes after 7: 00 p. m. in the evening, and they flash over here a letter -- they got a typist on staff. This is impressive. I mean, this is truly impressive. I am impressed. I will never criticize a government official again for not working hard, because clearly, when the Clinton administration tells them --

REP. SCHUMER: (Inaudible) -- ready, Mr. Chairman.

REP. SHADEGG: I've tried not to interrupt you, Mr. Schumer. The Clinton administration has apparently everyone so scared of the results of this hearing, I'd like to know if anything's going on in Washington other than their officials watching these hearings and responding to what's said. Having said that, let me follow up on another point. I've got to tell you, I am -- Mr. Schumer pointed out that he had great respect for the restraint of the two gentlemen in the middle. I want to point that out. I've got to tell you, I think it's fine that you have restraint. I find it a little difficult that you can be that restrained. I have a nine-year-old and a thirteen- year-old, and I can't be that restrained.

I want to clarify something in the record. Mr. Barr here next to me held up these two autopsy photos, which are ghastly. I'm sorry the press wasn't here. When Mr. Schumer holds up things like this, the press arrives and takes a gazillion pictures. It's called a photo op. But moments later --

REP. SCHUMER: -- (Inaudible) --

REP. SHADEGG: I'm trying again myself. Moments later, one of my colleagues on the other side solicited the question that, in fact, one of these two children had a stab wound. I have reviewed, and I think it's important for the record to show, one is Baby Doe 62; the other is Baby Doe Girl 57. I have just reviewed both the Department of Justice report, which lists the cause of death, and the autopsy that we have, and neither one of them list a stab wound. So I think it's a statement -- the

question that that was -- that either one of them died as a result of a stab wound was disingenuous.

REP. : Would the gentleman yield?

REP. SHADEGG: I will not. I've got --

REP. : Just so I can clarify that.

REP. SHADEGG: You can do that on your --

REP. : (Inaudible) -- those pictures did. I said the record shows -- (inaudible).

REP. SHADEGG: May I have my time, Mr. Chairman?

REP. : Oh, you don't want the facts, I understand, sir.

REP. SHADEGG: I want the time. I'd like my time. Mr. Rice, you characterized the Amnesty International report on the Israelis as anecdotal. Have you read it?

MR. RICE: Yes.

REP. SHADEGG: Okay. One of the anecdotes deals with the death of a five-day old baby, does it not?

MR. RICE: I believe so, yes.

REP. SHADEGG: Okay. And, indeed, it begins with an introduction that says they have received the names of 18 babies, under the age of six months, all of whom died as a result of this. And you're going to dismiss that because that's just anecdotal, is that right?

MR. RICE: No, the point I was trying to make is that that report doesn't actually say what those babies died of. They refer to tear gas. It could be CS; it could be CN, and I think there is a very distinct difference.

REP. SHADEGG: I only want to point out that testimony that was just brought out from the Justice Department report reveals that the attorney general recalled that since there had been no laboratory tests performed on children relative to the effects of the gas, she relied on anecdotal evidence. I presume she was not given this anecdotal evidence of the death of these children.

MR. RICE: I can't comment on that.

REP. SHADEGG: I'm sure you can't. I also heard you say earlier that when you did all these analyses, it was not what really happened at Waco. And I heard you colleague, Mr. Upshaw, say that what should have happened was the people should have left the compound. But they didn't leave the compound. I want to go into a question that troubles me. My wife and I have been married

for many years. She has a different tolerance to medicine than I do. When I get a headache, it takes me a minimum of three aspirin, sometimes more, to knock that headache down. If my wife takes more than one aspirin, she becomes ill. I can tolerate Advil; I can tolerate two or three Advil at a time. My wife takes one Advil, and she's violently ill; it's too much for her.

I experienced that in other friends. I have a good personal friend, who if he drinks a cup of coffee, he immediately goes into the shakes and can't sleep for at least 12 or 14 hours. I mean, I've watched him. It gets to him. He cannot tolerate it. Now, I drink that stuff by the bucket load every day. You've testified here today, very dispassionately, about how there is no evidence as to how this affects women and children differently. I want to talk about children. What studies have you done on children between the ages of say, 14 and 6.

MR. RICE: Personally, none.

REP. SHADEGG: Dr. Upshaw?

MR. UPSHAW: No studies have been done on children between 14 and 6.

REP. SHADEGG: So we don't know.

MR. UPSHAW: I would add to that, you don't know, but the reports that you have in front of you, the ones that you've just been pointing out, also do not know. Because all they're quoting is anecdotal information that's come from an exposure that took place in other countries; on the information we gained after the event, so that the exposure agent was not known, the dose of the exposure agent was not known, and the -- (inaudible)-- report --

REP. SHADEGG: Precisely my point, Dr. Upshaw. We don't know. We do not know the effects of this gas on children. What we do know, I think we know, I think the record will reveal, is that there were gas masks in that compound for adults. There were no gas masks in that compound for children. Indeed, as I understand it, it is impossible to create a mask -- a gas mask -- for a child under the age of two. And, in fact, while I heard you testify that the Israelis have created them for children two and over, there is no gas mask for a child under two. But we know, we do very know that those children under two were going to be exposed to this gas, and the children between two and 14, or two and six, who couldn't wear a gas mask, were going to be exposed to it. And we have no studies, not one study on its effect on children. Not one. We don't know whether it will affect me the way an aspirin affects me, or whether it will affect them the way it affects my wife. And in that circumstance, I find the use at least scary when I have a thirteen-year-old and a nine-year-old. Thank you.

MR. : Mr. Chairman, may I make a comment?

REP. MCCOLLUM: You may. You may respond.

MR. : Okay. I agree with the Congressman's statement, because in going through the various bio-chemical processes of ultimate toxicity, it really is highly dependent on metabolism and disposition factors. And these factors are species, sex, genetic factors, environmental, stress on the

individual, their diet, their age, pathological conditions, tissue and organ specificity, dose and enzyme induction inhibition. So that's what gives you a different response to medicine than your wife would have. And it may account for differences in people's response to this particular agent.

REP. MCCOLLUM: Thank you, Mr. -- (inaudible) -- for those comments. Mr. Bryant, you're recognized for five minutes.

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REP. BRYANT: Thank you, Mr. Chairman. I would yield my time to my colleague -- (inaudible) -- Mr. Schiff.

REP. SCHIFF: Dr. Stone, you were asked a number of questions about who you may have talked with about this situation. I would like to clarify, would you say exactly how you originally got involved in the Waco tragedy, and who or what agency got you involved?

MR. STONE: The reason I got involved was, somewhat reluctantly, I accepted the appointment in the deputy attorney general's panel to investigate Waco.

REP. SCHIFF: So you were a member of the official panel of the Department of Justice to investigate the Waco situation.

MR. STONE: That is correct.

REP. SCHIFF: And you were selected by the Office of the Attorney General for that position.

MR. STONE: That is correct.

REP. SCHIFF: This attorney general's office.

MR. STONE: That is correct.

REP. SCHIFF: Let me turn to --

MR. STONE: Could I just say one other thing?

REP. SCHIFF: Yes, please do.

MR. STONE: Because Congressman Schumer asked me about these -- if I ever talked to these two people, these two groups. And I just want to say that the people I told you, one called me on the phone, and the other I just met in the hallway.

REP. SCHIFF: For the very first time?

MR. STONE: Yes.

REP. SCHIFF: I'd like to go to Dr. Upshaw and Dr. Rice. I'd like to ask if, at least in general terms, do you agree with Dr. Stone that possible side effects or direct effects I should say, of CS gas or whatever might be contained with it, is in matter not only of concentration, but of concentration plus duration. Do you agree with that statement? Dr. Upshaw?

MR. UPSHAW: Yes and the earlier statement of Dr. Stone and clearly the misunderstanding of that concept. The dosage is determined by the concentration to which the individual is exposed, multiplied by the time for which that individual is exposed. That gives a measure of the total exposure and the amount that that person then inhales is a measure of the total dosage.

REP. SCHIFF: So you are in agreement then, and I'm sorry if there's any misunderstanding, that the affect is a matter of concentration times duration.

MR. UPSHAW: Let me just clarify that. There are two things that we're talking about here. One is the irritation. And the irritation that you get on exposure to CS is a function of the concentration. But the dosage that you get is related to toxicity, and it's the duration for which you're exposed to that which is a critical factor in that area.

REP. SCHIFF: So they're both important factors.

MR. UPSHAW: One is more important -- the irritation that you get, the other is more important -- the determining factor in terms of the measurement of the toxicity.

REP. SCHIFF: And the more important factor for toxicity is duration, if I understood you right.

MR. UPSHAW: Duration and concentration. Because if the gas is not there, you can be exposed for hours and nothing happens.

REP. SCHIFF: Well, it's the two together is what I'm trying to get at.

MR. UPSHAW: Absolutely.

REP. SCHIFF: Now, as you know, there was a plan here to pump CS gas into this -- into a building for 48 hours. I'd like to know if in the United Kingdom, either of you who are professionals in this type of chemistry and inhalation toxicology can think of an example of where there was a comparable plan by the British government to pump CS gas into a building for 48 straight hours -- under any circumstance.

MR. RICE: No.

REP. SCHIFF: Dr. Rice, you can't think of any?

MR. RICE: No.

REP. SCHIFF: Dr. Upshaw, can you?

MR. UPSHAW: None at all.

REP. SCHIFF: Can you think of an example, regardless of the amount of time that the gas was going to be put into a building, where CS gas was used by the British government, knowing there were children inside a building? Dr. Rice?

MR. RICE: I can't think of any, no.

REP. SCHIFF: Dr. Upshaw?

MR. UPSHAW: I'm sorry, I can't answer that. I don't have the knowledge.

REP. SCHIFF: I couldn't hear you, Dr. Upshaw.

MR. UPSHAW: I don't have the knowledge, so I can't answer that I'm afraid.

REP. SCHIFF: Well, I just want to observe that both of you gentlemen are testifying, and as professionals and as experts, but in a situation that -- I've given two factors at least, the use of the gas for 48 hours at least as a plan, and when children are inside the building. And when children were also inside a building, regardless of whether it was 48 hours or 48 seconds, and neither of you has an example that you can at least think of here where your government has chosen to do either of those two things. Let me ask another question about the use of CS gas in the United Kingdom. Has anything happened to -- I don't know if it has -- but has anything happened to cause the United Kingdom to change its use of CS gas over the last several years? Would they still use it now in all cases as they used it, say ten years ago, or has any modification in policy occurred?

MR. RICE: I know of no modification of policy, but I'm not really experienced in that area of government policy.

REP. SCHIFF: Dr. Upshaw, are you --

MR. UPSHAW: I would agree with that entirely. We are not knowledgeable of new government policy, but we're not aware of any change.

REP. SCHIFF: Alright. Dr. Stone, I believe that you were commenting really at the very beginning and now we're at the very end, on some other observations that you made about the handling of the Waco situation. And there wasn't time to get into that in any detail. I'm going to ask you to come back to that when you're asked about what you saw and what you'd do differently. Is there anything you want to add at this point?

MR. STONE: Well, you know, from my perspective, I was concerned about this point, about who were the people inside the compound and what were they like. And I just want to say, in terms of this whole thing, that one of our Harvard Law School graduates was inside the compound. A man by the name of Wayne Martin, an African American. There were many people of color in the compound, because the compound was drawn from Seventh-Day Adventists. And so they had come there because they were impressed with David Koresh as people have said. But what they haven't

said is -- and I was very disturbed at the testimony of the FBI, because I feel very strongly that for them to keep insisting that David Koresh is an anti-social personality is totally un -- it sort of doesn't fit the facts at all. David Koresh, as a young man -- as a boy -- would spend hours memorizing the Bible.

REP. SCHIFF: My time is up, let me just ask you to clarify one thing though. You mentioned people of different races, would that be relevant in this situation? I ask you that as a physician.

MR. STONE: It was relevant --

REP. SCHIFF: Would it matter physiologically?

MR. STONE: I don't think that mattered at all.

REP. SCHIFF: Okay, thank you, Mr. Chairman, I yield back.

REP. MCCOLLUM: Mr. Schumer, you're recognized for five minutes.

REP. SCHUMER: Thank you very much, Mr. Chairman. And I guess the questions I want to ask, I want to just wrap this matter up with Dr. Stone in terms of who visited him, who called him. I was surprised to see you raise your hand, Dr. Stone. Who called you of the three? You said you had had contact with Failure Analysis -- why don't you tell us each one. First, Failure Analysis Associates, which is a --

MR. STONE: I met someone outside during the intermission, who introduced himself to me.

REP. SCHUMER: Okay. And what about Fran Haga, is she the person who called you?

MR. STONE: I think that is the woman who called me --

REP. SCHUMER: When did she call you?

MR. STONE: Long before the hearings.

REP. SCHUMER: How long before?

MR. STONE: Maybe two months ago. I know it was before I went (on post ?).

REP. SCHUMER: And what did she say? How did she identify herself?

MR. STONE: She said that she was doing research.

REP. SCHUMER: Did she say who she was working for?

MR. STONE: She said she was doing research for the committee.

REP. SCHUMER: For the committee.

MR. STONE: Yep.

REP. SCHUMER: Mmm-hmm.

MR. STONE: And she associated herself, in some way, with the committee.

REP. SCHUMER: I see. Did she ever mention the National Rifle Association?

MR. STONE: She told me she was a lifetime member of the NRA.

REP. SCHUMER: But working for the committee, you're clear on that.

MR. STONE: She said she was --

REP. SCHUMER: Doing work for the committee --

MR. STONE: Yes.

REP. SCHUMER: Your words. Thank you, that's very illuminating. And then I mentioned the National Rifle Association, that was the third one you raised your hand on.

MR. STONE: Oh, I thought I'd raised my hand about two. Those were the --

REP. SCHUMER: Okay, you raised your hand about three -- Failure Analysis Associates, Ms. Haga and the National Rifle Association.

MR. STONE: Well, that's because Ms. Haga was -- it was two in one.

REP. SCHUMER: I see. Okay, you learned that. Because she was a lifetime member doesn't mean she's working for them necessarily.

MR. STONE: Ah, no.

REP. SCHUMER: Okay, you wanted to just be sure, and I appreciate that.

MR. STONE: I didn't want to leave anything out.

REP. SCHUMER: No stone unturned.

MR. STONE: Right. I've gotten that many times, Congressman.

(Laughter.)

REP. SCHUMER: In any case -- please, we heard even a worse joke from the staff. I guess my next

-- I'd just like to make a comment here, and this is my own opinion, and as usual, it's somewhat pointed, let's say. You know, we've heard many in modern day America decry "moral relativism," which means that every opinion has equal weight, even those that are morally superior to others. I find this panel an example of that, and I'm saddened by it. With no offense to any members of the panel, we have two people here, Dr. Rice and Dr. Upshaw, who are world experts, renowned throughout the world in this subject of CS tear gas. We have two people, Dr. Uhlig and Mr. Marcus, very capable people in their own right who, by their own admission, are not experts in this subject. Neither has published a single article on the issue of CS tear gas.

And then we have conflicting opinions, and we find that many -- first, the way the panel is set up, all the opinions are equal, the years of study and research that Dr. Rice and Dr. Upshaw did, is equated to the, in my judgement, less studied opinions of Mr. Marcus and Dr. Uhlig. And then we find very discouraging and disturbing, without putting a value on it, that all those on one side -- not all -- but most of those on one side of the aisle choose to believe Mr. Marcus and Dr. Uhlig, and just about everyone on our side chooses to believe Dr. Rice and Dr. Upshaw. One of the staff people commented to me on making that point that he loses faith in the real fact-finding ability of Congress. Because in my judgement, and I think in the judgement of most objective people, the opinions of Rice and Upshaw would have more weight than those of Marcus and Uhlig on this subject. And moral relativism, welcome to this hearing. I yield my remaining time to Mr. Wise.

REP. WISE: I thank the gentleman. I'm going to ask the panel, following up on the gentleman's remarks, I'm going to ask the panel to respond very quickly, Dr. Stone, you are a psychiatrist as I understand it, you are not a toxicologist are you?

MR. STONE: No, I am not.

REP. WISE: And you've published no articles in that regard.

MR. STONE: No.

REP. WISE: Mr. Marcus, I believe that already has been established that you're not a toxicologist, is that correct?

MR. MARCUS: Oh, yes. I have Ph. D. in pharmacology; I'm a toxicologist as designated by the United States Environmental Protection Agency and I've been a toxicologist for 21 years.

REP. WISE: Okay, fine, no and I'm happy to have you put that in the record in writing, but what articles have you published on CS gas?

MR. MARCUS: Oh, I'm not an expert on CS gas.

REP. WISE: And are you on the Safe Water Drinking Act enforcement or in the safe water drinking --

MR. MARCUS: Oh, I don't do any enforcement, no.

REP. WISE: Well, that's good, because the people on the other side are going to cut the enforcement budget by about a third, and you'll have a lot of time to watch TV on the Clean Water Act. Dr. Upshaw, Dr. Rice, you're both toxicologists, published I believe. Is that correct? I would like to incidentally ask, if it's not been asked, that you submit your list of publications for the record, both of you gentlemen. Dr. Uhlig, are you a toxicologist, Ph. D. in CS -- I'm sorry, is your specialty in CS gas?

MR. UHLIG: No, sir, Mr. Wise, it is not.

REP. WISE: And I believe you opened your statement by saying I'm not an expert on CS gas, did you --

MR. UHLIG: That is correct.

REP. WISE: Thank you. And Mr. Parks, you've never professed to be an expert in CS gas, the chemical aspects.

MR. PARKS: That's correct.

REP. WISE: So the only two that are toxicologists, published, recognized as such, are Dr. Upshaw and Dr. Rice, and I thank the panel for making that clear.

REP. MCCOLLUM: You've yielded back your time?

REP. WISE: And the only thing I want to say for the record is -- yielding back my time -- the only two that are experts in the area of CS gas, which is the subject before us, the others are experts in other areas, but CS gas is the issue before us, and the only two that are experts that are published and recognized as such are Dr. Rice and Dr. Upshaw.

REP. MCCOLLUM: Thank you very much --

REP. : (Inaudible) -- on the other side, can I get Mr. Wise's time if he would yield --

REP. MCCOLLUM: If he wants to yield to you, certainly.

REP. WISE: Yes, ma'am, I'll yield to Ms. Jackson Lee.

REP. JACKSON LEE: Mr. Schumer, would you mind? Dr. Rice, Dr. Upshaw, I've started out with these questions because we've all been talking about children. And I don't think that there's any distinction on either side of the aisle of the compassion and the feeling that you have for the children that were lost, the African Americans that were lost, Hispanics that were lost, the Asians that were lost, the Anglos that were lost, the women that were lost and the children that were lost, and the men that were lost. Again, I ask you the question about CS gas, not CN gas, but CS gas. If there were holes put in or doors opened, and we don't have all of the facts, would the CS gas, as you understand it, and your study determined, immobilize mothers with children or children such that they could not

find an exit to get out, which all of us prayed that they would have been able to do. Can you tell me that?

MR. UPSHAW: The CS gas would not have immobilized them. And my instincts would tell me that mothers would pick up their children and take them with them.

REP. JACKSON LEE: Dr. Rice, please?

MR. RICE: I would concur with that view on that, nothing else.

REP. JACKSON LEE: Do you want to add anything about suffocation?

MR. RICE: I think at the concentrations that were likely in that building, given the amount that was put in over the time frame that it was put in, that starvation of air was not a problem. The concentration of CS was not high enough to exclude air from the building.

REP. JACKSON LEE: Thank you.

REP. ZELIFF: Ms. Jackson-Lee, your time is expired.

REP. JACKSON-LEE: Thank you.

REP. ZELIFF: Mr. Zeliff, you're recognized for five minutes.

REP. ZELIFF: I'm going to give my friend from Maryland, Bob Ehrlich, 30 seconds.

REP. EHRLICH: I just feel compelled to make a short statement with respect to Mr. Schumer's representation. As I said earlier, I don't think anyone here is on anyone's side. I don't choose to believe or disbelieve anyone on this panel. I thought it quite clear from the record that I asked a very specific question with respect to the appropriateness of CS gas use at Waco under the particular circumstances as described by witnesses before this committee. I appreciate the honest, forthright from every witness --

REP. ZELIFF: Reclaiming my time.

REP. EHRLICH: -- regardless of your side. Thank you.

REP. ZELIFF: Thank you. You're a chemist, aren't you, Dr. Uhlig?

DR. UHLIG: Yes, sir, that's correct.

REP. ZELIFF: With fairly decent credentials?

DR. UHLIG: Darned if I know. I guess that's your interpretation.

REP. ZELIFF: No, I'm --

DR. UHLIG: I was published and got -- (inaudible).

REP. ZELIFF: Right, so you know what you're talking about when it comes to --

DR. UHLIG: When it comes to the chemistry.

REP. ZELIFF: Right. Okay, thank you very much. In the line of chemistry, you stated in your opening that children could have died from asphyxiation from the CS gas. Could you expand on this point, and does CS have a different effect on children than it does on adults? If you want to mention toxicity as well, if you could be brief, I'd appreciate it.

DR. UHLIG: (Laughs.)Well, I've already mentioned the different factors that come into play. And I would agree with the gentleman from Harvard in his statements that -- and the EPA -- that there are differences in children. I see the differences in my own grandchildren, and that's, you know, where I come from.

The other thing is not so much of the CS, as opposed to the methylene chloride and the agents that were used to inject it -- methylene chloride and carbon dioxide, Congressman Zeliff. Those are the two agents that I don't think anyone considered when they injected the material into the room when Mrs. Reno was advised.

Once the fire started, then of course you have quantities, and I think you'll hear this testimony later on, quantities of hydrogen cyanide generated. Mr. -- oh, shoot -- sorry -- my British cousins indicated there was a particle size that prevented the CS from settling out. And if you take a look at that particle size, that's a dust particle, and that could be an accelerant for a fire. But when the CS does decompose, it does give hydrogen cyanide, carbon monoxide and carbon dioxide. But I don't think in the autopsy that you can determine how much hydrogen cyanide in the lungs of somebody is due to CS and how much of it is due to fire conditions.

REP. ZELIFF: All right, thank you very much. And Dr. Stone, as an independent reviewer of this tragedy and someone who worked for the attorney general in this review, do you feel that she was misinformed on the information that was given to her on CS gas?

DR. STONE: I don't think she was properly informed about the risk of CS gas to children, which concerned her, yes.

REP. ZELIFF: I would like to have the clerk pass out copies to the whole panel here on the crisis center log at Ruby Ridge. And I'll just read it quickly:

August 22, 1992. The log -- this is entering at 4: 50 PM. The log also stated that weather was a major factor and the plan was scheduled to commence late that afternoon, but might be pushed back because of weather conditions. Concern was raised about the deployment of gas into the residence because of a high degree of risk to small children and the possibility that a one-year-old baby was inside.

This is the -- these were the marshals and the actual marshals' -- official marshals' log. And Larry

Potts was involved at Ruby Ridge. He was also involved at Waco. He was involved with the decision there and involved with the decision at Waco.

And if I just -- I'm going to just give you one statement here. If you just take this information here, and again, I believe it's fairly credible, I would think that they would use this. After having gone through Ruby Ridge, why wouldn't they use the same background for Waco?

Just one question: If one child, just one child was known to be under 2 years old in the compound, since we knew that there were no gas masks anywhere, I mean, just take a picture of what we did as a government to all those children, to what happened at Waco. Was this a responsible act? Was it something that we should do? Or was this something that was an irresponsible act? And I'd just like each of you, just reading this, based on what we know, what they knew then also, do you think it was responsible or irresponsible to move forward? And start with you, Dr. Stone.

DR. STONE: Well, I -- you know, I don't want to sort of -- okay, let me just say very quickly that I -- in my view, I don't think that it was responsible to plan to put CS gas for 48 hours into a building containing children. I cannot believe that my colleague who is a physician from England would suggest if he was asked that that was an acceptable plan. I cannot believe it, so --

REP. ZELIFF: So that's what I'd like to do is if each of you were asked, based on this information or whatever else you know, would you move forward, and do you think that's a responsible plan or an irresponsible plan?

DR. STONE: No, I would not say it's responsible.

REP. ZELIFF: Thank you. Mr. Marcus.

DR. MARCUS: I just want to make a quick observation. The Hensworth (sp) report, which is what's relied upon by our British cousins, is one of what I would consider precisely the same type of anecdotal information that they deplore. They went around and talked to people weeks and weeks after the fact.

And I don't think it's responsible to say, "We don't know for sure it's going to hurt kids. "Well, if you don't know for sure, don't take the chance. That has always been my feeling as somebody to try to protect children and the American public: if you don't know, don't take the chance. So I don't think it was responsible.

REP. ZELIFF: Dr. Rice.

DR. RICE: I think, given the circumstances, as I said before, if it's an operational decision, the actual risk of doing harm is balanced by the benefit of going in, then I wouldn't have a problem.

REP. ZELIFF: So if you were that person that was making that decision, you would go ahead and do it?

DR. RICE: If that were my -- if those were my children in there and they'd gone through all that we understand that they'd gone through during the siege, then I think if you can maintain the concentration sufficient to have an effect, then yes, I'd go ahead.

REP. ZELIFF: You'd go ahead with your own children?

DR. RICE: Yes.

REP. ZELIFF: That's amazing. Dr. Upshaw?

DR. UPSHAW: I would agree with that. Furthermore, I would say that the information in the Hensworth report is not anecdotal. The committee investigated all the major hospitals in the area at the time, and the massive information was collected on the consequences of that specific event.

REP. ZELIFF: Dr. Uhlig.

DR. UHLIG: I don't feel it was responsible. I wouldn't be here now if that were the case. And just to show that there isn't any bipartisism (sic) here, I happened to serve on the Democratic Committee in probably the only county in a Republican state that is Democratic. So I don't play the party politics here.

REP. ZELIFF: Well, I thank you for your honesty, and we would agree on our side of the aisle as well. We're just trying to get at the truth. Mr. Parks.

MR. PARKS: (I must admit ?) I'm not qualified to answer that question, and I can't answer it.

REP. ZELIFF: Okay. Well, I'll tell you what. I'm not a chemist and I don't have a lot of papers published, but when I go home to my town meetings up in New Hampshire, I sure don't think I could justify our government putting in that gas in those amounts to women and children that eventually ended up in a tragedy of over 80 people. I just think -- it blows my mind, and I hope we get some answers the next couple days. Thank you all very much.

DR. : Can I -- Mr. -- can I just make a comment? That surely assumes that you accept that CS has killed all these people. What is the evidence for that?

REP. ZELIFF: Well, I said I look forward to the evidence that we will see in the next couple days, but I go according to --

REP. : Order in the house.

REP. ZELIFF: Those are obviously conclusions that different people can draw. Mr. Hyde, you're recognized for five minutes.

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REP. HYDE: I thank the chair. I was watching testimony in my office, and I got a little concerned about the downgrading of those people who are not published on CS. I understand there have been no tests made, scientific tests, of the effect of CS on infants. And if that's so, then it's pretty hard, I think, to draw scientific conclusions that they were not harmful.

But I did hear that the use of CS could cause an infant to vomit, and if you had an infant lying on its back -- his or her back, and was infused with this gas, causing vomit, if that child couldn't turn over if the mother wasn't right there, that child could strangle in its own vomit. Is that not so, Dr. Upshaw?

DR. UPSHAW: What you say is absolutely correct. What I'm questioning is where the evidence is that the child was vomiting. I see no evidence.

REP. HYDE: No evidence that the child vomited?

DR. UPSHAW: I have not been presented with any scientific evidence that the child was vomiting.

REP. HYDE: Well, after a fire, it might be awfully hard to find that evidence.

DR. UPSHAW: That's very true, but it doesn't allow one to presume that the child has vomited.

REP. HYDE: No, but the likelihood that this could happen would be a factor in considering whether to shoot that stuff in which is going to cause vomiting on infants who cannot protect themselves.

DR. UPSHAW: What I am suggesting, sir, is that there is no evidence that they vomited. I am suggesting that this is being put forward as one of the signs. What is known, in fact, in humans, in adult humans is that the incidence of vomiting is a very low incidence. It's about one --

REP. HYDE: But we don't know about infants, do we?

DR. UPSHAW: Absolutely, and I concur absolutely, we don't know about the incidence --

REP. HYDE: And so where do you give the benefit of the doubt if you have a lot of infants in a place and you really don't know? You're shooting in the dark, aren't you?

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DR. UPSHAW: As I said before, in this situation, it's an operational decision on balance of risk and benefit. There is risk, there is undoubtedly risk.

REP. HYDE: Risk to the lives of infants.

DR. UPSHAW: Risk to all lives in all these situations in which --

REP. HYDE: But particularly infants, who cannot protect themselves.

DR. UPSHAW: What I have said is there is no evidence to show that children are any more sensitive than adults.

REP. HYDE: But when they vomit, an adult might know what to do.

DR. UPSHAW: Absolutely.

REP. HYDE: But an infant lying on his or her back is helpless.

DR. UPSHAW: That is absolutely correct. I have children of my own so I know precisely what you're talking about.

REP. HYDE: But that's a risk, then, that was obviously taken by somebody who said, "Let's go ahead anyway with it," right?

DR. UPSHAW: It's a risk, and one has to judge the risk and benefit in these situations, bearing in mind all the other things that are happening to the children in that compound.

REP. HYDE: And both of you are -- Dr. Rice and yourself are scientists, and you're experts in this field. But experts are reluctant in the pure science of the matter to draw conclusions without some tests, without some data. Isn't that a scientific principle?

DR. UPSHAW: The scientific principle is that you seek the evidence and make a judgment based on the evidence.

REP. HYDE: But there is no evidence as to the effect of CS on infants, is there?

DR. UPSHAW: There is no evidence to show that infants vomit, either. And I'm suggesting that those two pieces of information are of equivalent value.

REP. HYDE: In other words, you don't buy the statement that this type of gas, which is supposed to be so irritating as to drive people out of a building, you're not ready to accept the fact that this poses an extra hazard on helpless infants who may be lying on their back?

DR. UPSHAW: What I'm saying is, there is a hazard, there is a risk. Whether you move is a matter of judgment at the time as to the relative benefits and the risks.

REP. HYDE: Right, it --

DR. UPSHAW: It's an operational decision. It has nothing to do with -- (inaudible) -- well, it is to do with -- (inaudible).

REP. HYDE: Sure, it's an operational decision.

DR. UPSHAW: Absolutely.

REP. HYDE: Now, that's a rather cold term to describe the possibility, indeed I would say the probability, of infants who cannot help themselves coping with a gas that is designed to irritate and will result in vomiting.

DR. UPSHAW: I'm sorry, sir, but you keep saying it will result in vomiting. I cannot agree with that.

REP. HYDE: Well, Dr. Marcus, I see you've been downgraded, but indeed you are a doctor. What evidence have you got that this would cause vomiting?

DR. MARCUS: I have a paper here by Dr. Park and Giamano (sp) of which my colleagues are very much aware, and it talks about all these problems that a -- the child doesn't exist according to these people. They -- this child never got hurt. This is one of the objective pieces of evidence we have, as opposed to nothing. And it talks about what happened to this poor young child. He was observed to have copious nasal-oral secretions, sneezed, coughed frequently, and he had upper airway obstruction. Precisely what you're talking about, vomit that would be aspirated, giving upper airway obstruction. I think that that's pretty clear.

REP. HYDE: There better be no asthmatics in there, right?

DR. MARCUS: If there's asthmatics in there, they're in big -- they have really big problems, because the secretions they put out, including the mucous secretions, might plug a lot of things up quickly.

REP. HYDE: All right, thank you.

DR. UPSHAW: Just as a matter of public clarification.

REP. HYDE: Yes, Doctor.

DR. UPSHAW: Nowhere in that paper does it say the child vomited.

REP. HYDE: Well --

DR. UPSHAW: An excess of nasal secretions is not vomited.

REP. HYDE: Well, Dr. Marcus says it means vomiting, and I don't know if any of you are experts on vomiting. I might be because I've vomited a few times in my life --

DR. UPSHAW: I am medically qualified.

REP. HYDE: -- and I probably will again.

DR. UPSHAW: I am medically qualified, sir, and there is no way that you can say that an excess of

nasal secretions is the same as vomiting.

REP. HYDE: Now, Doctor, really, don't you think that this gas might well result in vomiting in an infant?

DR. UPSHAW: From what we know, vomiting is certainly one of the effects of CS.

REP. HYDE: Okay.

DR. UPSHAW: But in the records that we have, it is not a particularly common one. It is not as common as the other features that we have already described to you, like --

REP. HYDE: But you don't know how it affects infants, do you, because you've no tests along those lines, isn't that right, no data?

DR. UPSHAW: No, we haven't. But are we suggesting that we expose infants to find out more about this on their systems?

REP. HYDE: Well, I don't know. It's probably better than just saying that it was a risk/benefit and it was worth taking the risk, because obviously it --

DR. UPSHAW: You'd have a controlled experiment where we actually exposed children to CS?

REP. HYDE: Well, I know you wouldn't want your children exposed to CS.

DR. UPSHAW: Not under those circumstances, no.

REP. HYDE: Yeah, I'm sure they didn't want their children exposed, either. I thank you, and thank the chairman.

REP. : Mr. Chairman, Mrs. Slaughter has come in and --

REP. ZELIFF: I will recognize you, Mrs. Slaughter, for five minutes.

REP. SLAUGHTER: Thank you, Mr. Chairman. I want to point out that the only infant that I'm aware of on this list was one that came out five months old. The conversation later with Mrs. -- the real Mrs. Koresh, the married Mrs. Koresh, said that there were 20 children, didn't mention infants.

And I would like to yield the rest of my time to Mr. Wise.

REP. : Mr. Schumer -- (inaudible).

REP. ZELIFF: If you would yield a minute to Mr. Schumer.

REP. : Thank you.

REP. SCHUMER: Okay, thank you. I guess Mr. Wise yielded to me. I'd just like to make one point. And Chairman Hyde is correct. Henry, if I just might -- Chairman Hyde is -- and I have tremendous respect for him -- is correct that if it was using the gas versus not using the gas and the children would come out and be safe, I think everyone would agree that we would not use the gas.

What you had to weigh then and what we all must still have to weigh right now is that not using the gas and letting the children stay in was -- also had some risks. We can all debate what the percentage of those risks were, but as I said earlier today or yesterday, if Janet Reno had said, "Don't use the gas, let the siege continue," and on day 54, David Koresh decided to set fire to the compound because he believed Armageddon was here or whatever else, we would all be screaming at Janet Reno for being too cautious, too careful, that she should have gone in. And perhaps if you would have said, what was the plan of going in, and they said teargas, "Well, teargas is a lot better than a conflagration. "

So the question is not teargas versus not teargas. The question is the risks of teargas versus the risks of allowing Koresh to remain alone -- a very difficult question. I yield the remainder of my time -- I can't yield, it's Mr. Wise's time.

REP. HYDE: (Inaudible.)

REP. SCHUMER: Why don't you ask --

REP. HYDE: I just have one request to make.

REP. WISE: One request, yes, sir.

REP. HYDE: Thank you so much. I owe you one.

Dr. Marcus, would you make available to the committee that monograph that you were referring to?

DR. MARCUS: Yes.

DR. HYDE: Concerning the stopped-up nasal passages.

REP. ZELIFF: I'll add any time necessary, Mr. Wise. Go ahead.

REP. WISE: Thank you. No, I'd rather be in Mr. Hyde's debt. (Laughter.)I thank you.

Let me get -- I happen to agree with what Mr. Schumer said. Are any of the panel here experts on the impact of armored vehicles crashing into and having to tear down a house because you weren't able to drive the people out?

Is anyone -- I'm asking a rhetorical question -- is anyone here an expert on the impact of 105 mm shells rained into a compound with women and children and people inside? I don't think so.

And so it's a question of in relation to what? What were the options available?

Now, Dr. Upshaw, since you -- Mr. Hyde was examining you, is there any evidence that any of the children were killed by CS gas?

DR. UPSHAW: None that I have seen.

REP. WISE: And, incidentally, for the record, let me state that the -- I was not referring necessarily to the pictures that Mr. Barr had. I was referring to the fact that the record showed that at least one child was stabbed. So there is no evidence that any child was killed by CS gas. Was -- going back to your former testimony, was it not your testimony that the gas that was injected into that compound was significantly below any lethal content?

DR. UPSHAW: Very much so.

REP. WISE: And was it not also your testimony that that would have been reduced further in terms of lethal nature by the fact that winds were then blowing through that compound due to the holes that had been knocked into it?

DR. UPSHAW: Any ventilation would reduce the concentrations.

REP. WISE: We've also spoken a great deal about the children, and that's what is uppermost on all of our minds, particularly those -- all of us because I believe all of us are parents.

But at the same time, we had a number of -- probably 50, at least, armed men and women inside that compound. And that was also part of the objective was to be able to get into that compound and get the children out safely, hopefully to get the parents and adults out safely, and not to have anybody killed. And we had already had four ATF agents shot in just that exercise.

And so all of that given, you talked about risk/benefit. Do you then think that the -- given what you know to be the case, both from your research and what you have heard today, did the risk of injecting that gas, was it commensurate with the benefit that was hoped to be obtained?

DR. UPSHAW: From what I understand of the operational decisions, yes, I think the risk was appropriate.

REP. WISE: I'd just say that to the other side, which is very hot on risk/benefit analysis right now in all of our legislation.

So what we had, then, was a situation where you had David Koresh, acknowledged child molester, acknowledged child abuser, stockpiled automatic weapons in violation of federal law, had shot -- he and his followers had killed four ATF agents, a number of children in degrading conditions.

And the decision was made to introduce a gas which the testimony of the only two that have published and are acknowledged as experts in the area of CS gas was that there was no evidence that any child was killed by CS gas, there was -- the amount of gas introduced into that compound was below any kind of lethal content -- I think you said about 1/10 of what would be considered

lethal, Dr. Upshaw -- and that that dosage also left them not only time, but also by the winds, whether it was 25 knots or 35 miles per hour, blowing through that compound. That was what the FBI faced that day. I would yield back my time to Ms. Slaughter and thank the panel.

REP. SLAUGHTER: (Inaudible.)

REP. ZELIFF: All right, thank you very much. I will take five minutes for myself. We'll conclude this panel tonight so we won't have to come back here. I'm sure they'll be happy about that, and so will everyone else. But I want to ask a couple of quick questions. First of all, I want to clarify something, Dr. Stone, if you could take the microphone over there. In any way, did your contact with Fran Haga have any influence on your testimony here tonight?

DR. STONE: No.

REP. ZELIFF: No, I didn't think it did. I also want to ask Dr. Upshaw and Dr. Rice if you had any relationship with the Justice Department in giving advice about the use of this gas before the assault on the Waco compound in April of 1993?

DR. UPSHAW: None at all.

REP. ZELIFF: All right.

DR. RICE: (Inaudible.)

REP. ZELIFF: Also, am I correct that the studies you've done of the delivery method of the CS gas in your research was primarily through the incendiary device, as opposed to the type of delivery method they used in this particular case?

DR. UPSHAW: The studies reported in the Hensworth report are largely in relation to the incendiary devices, yes. But I should point out that the general consensus is that incendiary devices are actually somewhat more toxic than the --

REP. ZELIFF: I wasn't asking that question at all. I'm just suggesting from what I've read in the Justice Department's own report and the FBI that the method of delivery was not the standard one and not the one used primarily by the British or in your studies.

DR. UPSHAW: That is correct.

DR. RICE: Correct, sir.

REP. ZELIFF: And I'd like to make a couple of quick observations of my own. Everybody else is making all these observations tonight. I think the salient point here is that question of whether the attorney general got the full advice that she should have gotten, and perhaps whether she should have been questioning it more than she did at the time she made the judgment call.

It seems to me pretty apparent that she got some advice we haven't heard, except from what Dr. Stone has been able to tell us because he's the only one on the panel here who had any experience in this and was involved in overseeing the investigation of the advice itself. We're going to get that testimony and all about what she did get, both from her and from others, coming up in future panels. But based upon what I've heard tonight, while there is certainly conflicting opinion, I think that everybody here at this panel is an expert, not necessarily having done the studies that Dr. Upshaw and Dr. Rice did under peculiar conditions on CS gas, but then nobody else, I guess, has really. But we have an eminent toxicologist from the Environmental Protection Agency who's spent a lot of time studying this, and Dr. Marcus, who gave us what sounded to me very, very good scientific opinions, obviously somewhat in conflict with the two British. We had Dr. Uhlig, who is an excellent chemist, as far as I know. No one tested his credentials on that. He gave us excellent testimony, as Mr. Parks gave us the expert advice from a military perspective with regard to the conventions. And Dr. Stone, who is a Harvard psychiatrist and a law professor, a strange combination, and was a person who was designated by the attorney general to review all of these matters, has given his opinions to us tonight.

And I might add that, with the exception of our two British guests, who were brought over here by the Justice Department, and of course, Mr. Parks, who does not have a perspective on the technical part of this, the others concluded that they would not have used this gas under this circumstance with children present, for the potential possibility of vomiting, for the potential possibility of asphyxiation. And we know that there were younger children who did die of asphyxiation. Whether it was from the fire or whether it was from the CS gas, I don't think we'll ever know. Or whether they ever vomited, we will never know.

The problem is not for us to decide that. The problem is for us to decide whether or not the judgments that were being made at the time were being made with the best evidence available, whether the

people giving the advice to the attorney general exercised prudent judgment in deciding what was to be given to her or not, whether she was given enough, and whether or not when she got it, she should have questioned and asked for more under the circumstances.

Those are the questions, and we don't have all of those answers tonight, but your input has been very meaningful. I want to thank you.

In concluding, I've got to ask one last question of you, Dr. Stone. You left a very pregnant answer on the table. You were asked and then cut off about a question related to your opinion as a -- I presume as a psychiatrist and as a reviewer of the facts by the attorney general's designation, of the whole question of the FBI's handling of David Koresh in terms of his -- I guess his antisocial behavior. Would you at least, as we walk out of here tonight, clarify that so we don't have telephone calls ringing off our phones tomorrow that we didn't give you a chance to respond to that?

DR. STONE: Yes. The question was whether he was an antisocial personality disorder and therefore he could be treated like an ordinary criminal, as I believe the FBI testified today and as they said at the briefing. Now, there isn't any doubt that I and the other psychiatrist who reviewed

this information did not think that he was an antisocial personality disorder. He may have had some other disorder, but he certainly was not that. And it was a mistake to think that he would react like a common criminal would react to a show of force.

REP. ZELIFF: Thank you very much. I appreciate the testimony that everybody gave. You've been well to endure us tonight. These hearings will then therefore be recessed until tomorrow morning.

REP. : Mr. Chairman.

REP. ZELIFF: Do you have a point of order?

REP. : -- procedural inquiry.

REP. ZELIFF: Procedural inquiry. I'm about to tell you when tomorrow, but go ahead.

REP. : All right. I simply want to ask, in terms of the final focus of these hearings, meaning whether we will have findings and then maybe corrective actions, I just want to be assured -- I'm a new member -- that out of the testimony that we've gotten, which has obviously been conflicting, will we not have findings which may in fact suggest that this CS gas did not prohibit people from getting out, that the finding -- that we also have --

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REP. ZELIFF: Well, this is actually --

REP. : May I finish, Mr. Chairman?

REP. ZELIFF: Let me talk about the procedure. If I can cut you off, we've got to go vote, and I don't mean to be rude. But the bottom line is, there will be a report issued by the committee, you will have an opportunity --

REP. : Can we have corrections made as well?

REP. ZELIFF: -- you will have an opportunity to correct it or suggest corrections to it.

REP. : That's what I'd like to know. Findings and corrections.

REP. ZELIFF: And you will also have an opportunity to issue minority views if you disagree with it.

REP. : I appreciate it.

REP. ZELIFF: So those opportunities ultimately, at the end of the day --

REP. : Thank you.

REP. ZELIFF: -- will be there for you. This joint subcommittee hearing on Waco will commence tomorrow at 9: 00 AM, not in this room, but in 2141 next door. Until then, 9: 00 AM tomorrow morning, these subcommittees are in recess.

####END OF PANEL