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Chair

Mr. Greg Kerr

Standing Committee on Veterans Affairs

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● (0850)

[*English*]

The Vice-Chair (Mr. Peter Stoffer (Sackville—Eastern Shore, NDP)): Members, ladies and gentlemen, seeing quorum here, I thank you all very much for coming.

To Major-General Dr. Pierre Morisset, sir, thank you very much for coming today. We look forward to your comments.

Before we start, our colleague, Mr. O'Toole, would like to take a minute to pass on some great news that he has.

Go ahead, sir.

Mr. Erin O'Toole (Durham, CPC): Thank you very much, Mr. Chair, for allowing me to say a few words.

Colleagues, I had the honour last night to attend the world premiere of *March to the Top*. It's a Canadian documentary that features 12 Canadian veterans, men and women who have served and are struggling with other physical or mental injuries from their service. And they came together in a fundraising initiative. The True Patriot Love Foundation, something I was involved with before politics, brought this team together last year and they summited Island Peak in the Himalayas.

The documentary is inspiring and I think will serve as something to inspire a generation of veterans. It's going to be broadcast Monday night at 8 o'clock on CBC. I'd invite all my colleagues and friends here to tune in. It's called *March to the Top*. If there is interest, I'd love some help from fellow MPs maybe to do a special screening in Ottawa so that more of our colleagues could see this inspirational piece.

Thank you, Mr. Chair.

The Vice-Chair (Mr. Peter Stoffer): Mr. O'Toole, thank you very much for that. I greatly appreciate that.

Major-General Pierre Morisset, please, sir, if you wish.

Dr. Pierre Morisset (Chairman of the Committee, Scientific Advisory Committee on Veterans' Health): Bonjour, everyone. Good morning.

I have a few introductory remarks I'm told should be about less than 20 minutes, or do you want something tighter?

The Vice-Chair (Mr. Peter Stoffer): It would be up to you, but up to 20 minutes would suffice.

[*Translation*]

Dr. Pierre Morisset: I will start in French.

The committee established by the Minister of Veterans Affairs in December 2011 is made up of five individuals who were given the mandate to study one issue: depleted uranium. I could read you the mandate we were given, but it is in the report.

Essentially, the mandate comes down to two questions: is depleted uranium harmful to human health? Could Canadian soldiers have been exposed to depleted uranium? The two questions are linked, because there must be exposure in order for there to be an effect on health. It is very important to understand that. There was a very close and very important link between the two parts of the mandate.

I will start with exposure. I will continue in English.

[*English*]

Uranium, I'm not saying depleted uranium, but uranium is ubiquitous. By this I mean it's all over. It's in the earth's crust. We all have some one way or the other. We all have some uranium in our bodies at levels that can be measured. It comes from various natural sources. It's in our food, in our water to variable degrees. The amount that you have in your body varies from place to place geographically.

It's important to remember this: soldiers on the battleground do not have any individual monitors that can measure if they have been exposed to depleted uranium at a moment in time. Why? It doesn't exist. The technology is not there. It's not just Canada, no country has that, that I'm aware of. That makes it a bit more difficult to establish exposure, so this has to be done in a more indirect way. So you look at the situations, the broader context, and a few facts.

Canada does not use depleted uranium, so we do not have depleted uranium rounds. The Canadian soldiers in the conflicts that they were involved in, their enemy did not have depleted uranium weapons, so they were not fired upon directly by depleted uranium rounds. Also, there was no incident, that we're aware of, of any friendly fire by friendly troops, namely the Americans or the British, by accident on Canadian troops.

Let's look at the theatres where the Canadians were, as another general way of looking at exposure.

When depleted uranium weapons were first used was during the Gulf War in 1991. Canada did not deploy ground combat troops to that conflict. They deployed air and naval elements, and also a field hospital that was well behind the battle lines. There was one exception, however, and this was shortly after the war. There was a group of combat engineers who were co-located with American troops in a place called Doha, and there was an accidental fire—it was not an act of war or anything—and some of the depleted uranium rounds that the Americans used, which they used quite a bit in the Gulf War, were caught in the fire. There was no explosion per se, but the depleted uranium was present. Some of it was burnt and some particles were created, which were liberated in the area. We might come back to Doha later on, but that is really the only documented case.

I'll say it right now—and incidentally I'm jumping ahead of myself—but this was thoroughly investigated and it was determined that there was no appreciable risk to the health of these veterans.

● (0855)

[*Translation*]

Urinalysis is another way of finding out if there has been exposure. This is an individual measurement not a group measurement. The principle behind it is that uranium as well as depleted uranium, because both are related, are found in urine. In fact, any uranium or depleted uranium that is ingested or inhaled is going to end up being excreted in the urine. That is where it goes, nowhere else. That being the case, urinalysis can determine if uranium or depleted uranium is present.

Several countries, including Canada, have used these methods. About 5,000 soldiers from all NATO countries, not just Canada, have undergone urinalysis. The results showed that only those who had received fragments of depleted uranium shells had depleted uranium in their urine. That is important. How many? Most of them are American victims of friendly fire. Some American armoured vehicles were accidentally fired on. There were fatalities, of course, but there were also survivors. Some of them had fragments of depleted uranium in their bodies that could not be removed because of their location. It was more dangerous to remove them than to leave them where they were. That is another important factor.

Another method was used to determine what kind of exposure there may have been. The Americans, the French and the British conducted live fire simulations. They fired shells identical to those that were used in conflicts on vehicles that were also identical to those used in the conflicts. They measured the particles. Then they used models to determine the degree of exposure that the soldiers could have had. They reconstructed the situation.

To make things simple and to standardize everything a little, three levels were established following an agreement among all countries. The levels were 1, 2 and 3, with level 1 being the highest. So those were the soldiers who had been victims of friendly fire. At level 3, we find those who may have been temporarily exposed at much lower levels. As I mentioned earlier, this was the group of soldiers in Camp Doha. One of them could have breathed in fragments or particles that could have been released into the air.

I will now talk about the effects. There are two radiological effects.

[*English*]

I'll switch to English. Sorry, I'm not sure when to change.

The second part is effects. There are two effects. One is radiological, which means, essentially, lung cancer and lymphatic cancer in the adjoining lymph nodes, because of the exposure. The most dangerous one is by inhalation, breathing it in. The other effect is toxic, which is an effect directly on the kidney. It's not radiological, it's a chemical effect on the kidney.

If you compare uranium and depleted uranium, they have the same toxic effect, except for when you're talking about radiological; depleted uranium is 40% less radioactive.

I'll warn you right now that I'll switch from uranium to depleted uranium, but most of my remarks will be about uranium, because it's been studied for many years, since the 1940s, whereas depleted uranium is fairly recent. In 1991 in the Gulf War it was used for the first time, and its utilization was fairly specific, for combat. That's what we're looking at.

So, yes, there have been some instances where it's been demonstrated very clearly that uranium has an effect on the body, a negative effect. There were examples of individuals who attempted suicide—not military people, but those way back—by swallowing massive amounts of uranium. As had been predicted and demonstrated very clearly on animal models, these people had definite kidney problems. They didn't die, but they sure had kidney problems. There were also some accidents involving the processing workers—again, with massive amounts—and they had some kidney damage, which was, incidentally, reversible. So they did not die from this.

Earlier I referred to workers, or perhaps not. Uranium mining is done for the purpose of producing uranium that can be used to produce nuclear energy. Starting with the mines, you have miners who have been exposed to uranium particles, uranium-laden particles, if you wish. That was thought for many years to be the cause of cancer. They, incidentally, developed cancer. Miners had cancer. They said, “Bingo. We have the answer, and it is the depleted uranium”—sorry, I'm getting mixed up here—“it's uranium.” More studies went on and on, and they determined fairly clearly and convincingly it wasn't uranium. In fact, it was radon gas, which is much more radioactive than uranium.

Apart from the miners, there were processing workers at various stages: they were crushing; they were moving these ores around and making various oxides to be able to produce enriched uranium for use in nuclear power and weapons. What's their experience? They've been extensively studied over the years. They were exposed to uranium. And I repeat, uranium has the same toxicological effect as depleted uranium, but it is more radioactive. They were exposed for many years, in many, many different centres and they were very much studied. Overall, there was no convincing evidence, no strong evidence either way as to whether this exposure...and they were exposed definitely through these ores and these oxides, which are similar to the oxides that you have in weapons, and they did not develop cancer or any other related problem.

It was expected that they would. It makes sense. It's biologically plausible, but all the epidemiological studies that were done did not come out clearly and say that yes, this causes...in every incident of the 28 studies. Some did, and some did not. This is why I'm saying that it was not convincingly demonstrated by these studies. There were some studies that showed that the chronically exposed might have some effects on the kidney long-term, but they were mild effects. There was not kidney failure or major kidney disease.

● (0900)

[*Translation*]

NATO countries have conducted about six or seven major studies specifically on mortality and the incidence of cancer on groups of soldiers from their countries. Those studies have not shown any increase in the incidence of cancer or of deaths attributable to cancer.

● (0905)

[*English*]

UNEP, the United Nations Environment Programme, deployed teams to the Balkans. The aim of their studies was to demonstrate whether or not there was a residual risk to the populations, because in the Balkans, depleted uranium weapons had been used. They were smaller bombs that had been fired from aircraft, but nevertheless they had been used. Some had not exploded. Many of them were still buried in the ground. The concern was what this meant for the civilian populations.

They did studies in three different states in the Balkans. Their overall conclusion, the bottom line, was there was no appreciable risk. The greatest risk was to children, those who would have played around tanks that had been hit by depleted uranium rounds for about 500 hours. There was a small risk of lung cancer throughout life. That was a small percentage. The words they used were that the risk was extremely low. That's what their assessment was.

The reason I mentioned why these UNEP studies are important is that if Canadian soldiers in the Balkans were not shot at, if they were not involved in friendly fire, how could they have been exposed? No one knows for sure, but they could have moved around and entered some of the buildings that had been hit, and in this way they could have been exposed. But when you look at the studies, this was specifically looked at, not for the Canadian soldiers but for the population. That's what the conclusion was.

There was also the Baltimore group for Americans who were shot at. They were followed for many years very intensively. None of them has shown any kind of adverse health effects.

Some major studies on depleted uranium were done by the Institute of Medicine, the Royal Society in England, the National Research Council, very august bodies. I'll just summarize what they said with one statement. They predicted for level 3, which is the lowest level, the level which the Canadians at Doha would have been exposed to. The excess lifetime lung cancer rate was less than one in a population of 100,000. It was less than one. They say this is negligible. Health Canada at that level says it's a negligible effect.

There's another point that I wish to mention on exposure and effects.

[*Translation*]

I will continue in French. I try to balance my use of French and English, but, Mr. Chair, please tell me if that is not the case.

Out of everyone undergoing a medical procedure as we speak, someone in a hospital in Ontario or Quebec is having an angiogram in preparation for an angioplasty. That releases ionizing particles. So there is a risk of internal radiological exposure. The phenomenon has been studied. A recent article in the Canadian Medical Association Journal looked at the issue. The article concluded that, when a civilian has an angiogram, the level of radiation is 15 millisieverts. That is 15 times greater than the radiation received by one of the soldiers at Camp Doha, and yet the risk for the patient is zero.

All that to say that there is really no...what is the word?

● (0910)

[*English*]

There is no strong evidence of adverse health effects.

[*Translation*]

There is no evidence—that is the word I was looking for. There is no convincing evidence of any adverse effects on health, according to those studies.

[*English*]

The Vice-Chair (Mr. Peter Stoffer): Dr. Morisset, thank you very much for your presentation, sir.

We'll now go to questions. The pattern will be that we start on this side and we alternate back and forth in that regard.

We'll start off with Monsieur Chicoine, for five minutes, please.

[*Translation*]

Mr. Sylvain Chicoine (Châteauguay—Saint-Constant, NDP): Thank you, Mr. Chair.

Thank you very much for this presentation, Dr. Morisset. You have briefly set out for us the conclusions of the study showing that there is little likelihood that Canadian soldiers have been exposed to depleted uranium.

Your studies recognized that Canadian soldiers have health problems. According to you and according to the study, there is no likelihood that the causes are linked to depleted uranium. But did you find studies that correlated the symptoms observed in those soldiers? Have we started to look at any factors that might point us to the causes of their health problems?

Dr. Pierre Morisset: As I understand it, you are asking me what the problems are, in general terms.

In general terms, soldiers who have been deployed anywhere—

Mr. Sylvain Chicoine: I am referring to anywhere you have looked at.

Dr. Pierre Morisset: Anywhere—

Mr. Sylvain Chicoine: For a number of years, it has been suspected that exposure to depleted uranium is a probable cause of health problems—

Dr. Pierre Morisset: Yes, it is possible.

Mr. Sylvain Chicoine: —during the Balkan wars, and subsequent ones. For several years, according to studies that have been conducted, it has been thought that it was due to exposure to depleted uranium. You summarized them. Are there studies that say the causes could be something else? Have we begun to assess the soldiers and look at what might be causing their health problems?

Dr. Pierre Morisset: That is a general question. I will try to give you a somewhat general answer, while being as precise as possible.

Since 1991, during the Gulf War, a combination of problems has been called the “Gulf War syndrome”. That syndrome included a number of non-subjective symptoms, found in soldiers deployed during the Gulf War. There were a lot of symptoms, such as fatigue, headaches and so on. It has been looked into a lot and there were a number of possibilities, such as exposure to the smoke from the burning oil wells—we are talking about the first Gulf War—or pesticides, or vaccines. It was a very long list. Depleted uranium was one of 15 or 20 causes. It has been studied very closely and the causes have all been discredited one by one. The studies have been done, and they have not established any link between the symptoms and the various exposure possibilities.

Mr. Sylvain Chicoine: Each possibility has been studied in isolation, but could the cause be the combination of them? Vaccines, pesticides and depleted uranium may all have a small effect, and put together, the effects could be the cause of the soldiers' health problems. That is hard to define.

Dr. Pierre Morisset: Yes, but if none of them is the cause, it is difficult to conceive that a little bit of this one and a little bit of that one, strung together like beads in a rosary—

Mr. Sylvain Chicoine: You reached out to veterans who wanted to take part in the study and some responded. Can you explain why their evidence, their experience, is not to be found in your study? Why have you not considered them? It is not dealt with in your conclusion. Can you explain that?

● (0915)

Dr. Pierre Morisset: It was considered, clearly. I have to correct you on that. If we had included every piece of evidence from every expert, the report would have been huge. We did not claim that it was going to rival the major American or British studies. We wanted it to be simple, accessible and easily understood by veterans. After all, we conducted the study for them. At least, that is how we see things.

In terms of their evidence, we are going to examine it, for sure. We have taken a look at everything they provided us with and we have changed our approach. Most often, we went back to our files and dug deeper as a result.

Mr. Sylvain Chicoine: That's fine.

Do I have a little time left?

[*English*]

The Vice-Chair (Mr. Peter Stoffer): No, that's it. Sorry.

Now to Monsieur Ben Lobb, for five minutes, please.

Mr. Ben Lobb (Huron—Bruce, CPC): Thanks, Mr. Chair.

Mr. Morisset, would you consider the study you did with the other people on your panel to be an independent study of the facts? There are no partisan points at all involved with this. It's simply what the facts are: this is what you looked at and here's the evidence in this report. Is that how you'd characterize your study?

Dr. Pierre Morisset: Independent is independent, and we sure as heck wanted to make sure it was independent, because if it's not independent, our individual reputations are at stake.

Mr. Ben Lobb: Right. So if—

Dr. Pierre Morisset: But to answer, I know what you're asking me. That was our guiding principle as scientists that, yes, we have to be independent and objective, thoroughly objective.

Mr. Ben Lobb: So if the information was good or bad or inconclusive, it would be found inside this report.

Dr. Pierre Morisset: We had criteria, scientific criteria. But independent from the point of view—I think your question is—of any external pressure.

Mr. Ben Lobb: Yes.

Dr. Pierre Morisset: The answer to that is absolutely not, and I underline absolutely.

Mr. Ben Lobb: In the commentary that you provided, you said there is no monitoring device that is available for the military to either put on the collar of their uniforms or whatever. Is there anything that any of the manufacturers are currently working on to put it in? Is it a priority? Is there anything in R and D right now for that?

Dr. Pierre Morisset: I've asked myself that question, and because you're asking it, it makes it a good question.

Mr. Ben Lobb: Okay, I like that.

Dr. Pierre Morisset: I'm not aware of anything, but it certainly is something that ought to be researched because it would be completely different if we had a way of measuring exposure, not just to depleted uranium, but to arsenic, nickel, cadmium, or anything else that soldiers might be exposed to, which you don't necessarily find in the day-to-day environment. The only thing that they have as badges are for external radiation, in case of a nuclear situation. This is external radiation in large doses, gamma radiation, which does not apply to depleted uranium, but it would have been simpler.

This is the limiting factor in very many studies in any country.

Mr. Ben Lobb: Maybe this summer Mr. Stoffer and I will come up with some sort of a mechanism to measure this.

Dr. Pierre Morisset: Okay, well, you'd get rich.

Mr. Ben Lobb: Okay. I have one other question for you.

Could you tell this committee how the Canadian military handles depleted uranium weapons? Does the approach differ from that of the U.S. or any other country, and has it changed over the last 20 years, the way it handles the weapons?

Dr. Pierre Morisset: Maybe I was speaking a bit too fast, or maybe it was in French, but the Canadian Forces do not have depleted uranium weapons. They had some for a short time on board ships from 1989, perhaps 1990, until 1998. I could slip by one year on either side of that, but that's the only time they had depleted uranium.

Mr. Ben Lobb: So even in a NATO-led mission, it's pretty well unlikely.

Dr. Pierre Morisset: It was never fired. Canada never fired a depleted uranium round in battle.

Mr. Ben Lobb: Okay. Would it be possible to determine if they've ever handled them in any NATO-led missions?

● (0920)

Dr. Pierre Morisset: Oh, they've handled them, for sure. For sure they've handled them in the sense that these are cartridges, if you wish. They're rounds and they're stored, and they were there on the ships.

Mr. Ben Lobb: Just so everybody understands, you're not going to have any effects from it by touching it with your bare hand or anything like that.

Dr. Pierre Morisset: No, well, that's just it.

Mr. Ben Lobb: That's kind of where I was going with this.

Dr. Pierre Morisset: Okay, thanks for setting me straight.

But the external exposure—and everyone agrees with that—is very little because the radiation that is dangerous is called alpha radiation. That's associated with depleted uranium. That radiation is called alpha particles. They do not cross the skin barrier. They can't even get through a sheet of paper.

Mr. Ben Lobb: This is my last question, if I have time.

Because of the potential exposure of some of their military, what is the U.S. doing now to try to monitor, to measure? What are they doing to try to set the bar higher for what they can measure to protect their military?

Dr. Pierre Morisset: I don't know, but I think that for any reasonable forces—in the absence of the device that you and Mr. Stoffer will be working on and get rich with—the only improvement at this time would be, in a given situation if there is a reasonable chance of exposure, let's say to depleted uranium or something else, to get those measurements, urinalysis in this case, as soon as possible because the longer you wait, the less reliable your result is. That is the one thing.

From a technological point of view, I don't know where the Americans are. They're probably working on it, though.

The Vice-Chair (Mr. Peter Stoffer): Thank you very much.

Now we'll go to Mr. Casey for five minutes, please.

Mr. Sean Casey (Charlottetown, Lib.): Thank you, Mr. Chairman.

Welcome back, Dr. Morisset.

In response to a question from Mr. Chicoine, you indicated that this report is for veterans. I would ask you to be crystal clear on what the message is to veterans and to people who adjudicate their claims. Does this report stand for the proposition that any and all claims by any veteran that they have suffered an injury or a disability or have a claim for a pension on the basis of exposure to depleted uranium must be rejected?

Dr. Pierre Morisset: I know what your question is, but I'll preface my answer with something else.

There are two aspects here. When we say it's for the veterans, it's not necessarily for claiming; it's for their health. If a veteran is sick and he feels that it is attributable to depleted uranium, it's important that he get the right treatment, because, on the strength of our investigation, what we're seeing is that it's unlikely that what he has can be attributable to depleted uranium, scientifically speaking. We're not saying that it's impossible. Our words were carefully chosen. It's improbable. We did not say that it's totally unlikely—none of these words—but it's unlikely, improbable.

There may be some soldier somewhere who has been exposed in a way that we're not aware of, a special operations person, for example, who was in fact with the Americans in one of these.... I don't know this. Our committee can't determine this. Maybe there is a veteran somewhere who has been exposed to depleted uranium, but it would have to be at a very high level.

I have to remind you that when we looked at the ones who had been the most highly exposed that we know of, these blue on blue—and I'm sorry about my military side coming out here—the friendly fire situation, they don't have a problem.

As for the adjudication, it's not a message for the adjudicators. They will certainly look at this to freshen up on their scientific facts, but it was not destined for the adjudicators.

● (0925)

Mr. Sean Casey: In the course of your study you sought input from veterans. You made contact by e-mail. You had six veterans contact you by e-mail and you actually heard from two. Is that right?

Dr. Pierre Morisset: There were two aspects. There was this open e-mail account that was created, and any veteran could send in his remarks or suggest any literature that we might look at relating to depleted uranium. That would cover the whole ground. Surprisingly, we did not get that much traffic through that e-mail account. In fact, there were only six veterans. This went from February until.... It didn't stop. It didn't close. It's still open, I guess. Those veterans who asked to appear before the committee, were all invited individually, personally, at no cost to them. We offered also that if they wished to have a specialist with them, of their choice, to better explain their point of view, we were happy to hear that, at no cost. Two out of three responded and came to the committee.

Mr. Sean Casey: Okay.

At page 20 of the English version of your report, in the final paragraph, you said that your review "...excluded case reports, cross-sectional studies and clinical studies of hospitalized Veterans...".

You didn't consider case reports or clinical studies of hospitalized veterans.

Dr. Pierre Morisset: Yes.

Go ahead, ask your question.

Mr. Sean Casey: Is there not some valuable information that could have been gleaned from these sources?

Dr. Pierre Morisset: I admit it's not very clear.

This is jargon from the epidemiologist. Case report means an individual report. That's what it means. One person would say, "Well, our study includes one case, and this person had this and this...", and so on and so forth. This is usually not used in any kind of epidemiology.

And "hospitalized patients", what is really meant by that is that just by the hospital diagnoses, just using the hospitalized patient diagnoses to base your report on, because you have no indication of whether or not they were exposed or potentially exposed or not, the information would be incomplete and your findings would be incomplete.

That's pretty standard in epidemiology, but that is not to—

The Vice-Chair (Mr. Peter Stoffer): Thank you.

Dr. Pierre Morisset: Excuse me, but that is not to say the studies were not comprehensive.

The Vice-Chair (Mr. Peter Stoffer): Thank you, Dr. Morisset.

Now we'll go to Mr. Hayes, for five minutes, please.

Mr. Bryan Hayes (Sault Ste. Marie, CPC): Thank you, Mr. Chair.

I want to take a step back, just so people understand in very, very basic terms, because I don't think it was covered. The report covers it, but I want to hear it from you. What is depleted uranium, exactly, and how is it created, in very basic terms?

Dr. Pierre Morisset: I mentioned earlier the whole idea of mining uranium. At the end of the process there is uranium that is purified enough to be used to produce nuclear weapons, but the main production line is for nuclear energy. In this process—and I have to get just a tad scientific here—uranium itself appears in three different variants. These different variants have a number attached to them. One is called uranium-235, the other one is uranium-238, and there's another one, but I won't get into that. They are different. They're like siblings: they have the same last name, but not the same first name, if you wish, and like siblings, they're different. How are they different, these two forms? They're different in that one of them, which is called uranium-235 and is the important one for creating nuclear energy, is fissile. Therefore it can be used to create energy by a chain reaction, and it is more radioactive. Essentially, those are the two main differences.

The depleted uranium is the residual product that is left after you have separated these two forms, the two variants. The depleted uranium that is left is less radioactive, is not fissile at all, so it cannot be used at all to produce any kind of energy or weapon.

● (0930)

Mr. Bryan Hayes: So if it's less radioactive, that's the part that concerns people's health, the radioactive component, i.e., the lung-cancer-causing component.

Dr. Pierre Morisset: Yes.

Mr. Bryan Hayes: So depleted uranium is less radioactive and therefore less likely to cause lung cancer.

I just want to understand, in civilian populations what workplaces would be exposed to uranium. Obviously this is the higher content of radioactivity. In which civilian workplaces would we see this?

Dr. Pierre Morisset: Depleted uranium?

Mr. Bryan Hayes: No, normal uranium.

Dr. Pierre Morisset: Normal uranium is in these processing plants all over the world. This is where they're most likely to be exposed.

But we're exposed to uranium, every one of us, by drinking water. It's constant—right now, I'm drinking uranium—but at levels that are not harmful.

Mr. Bryan Hayes: Going back to the civilian populations, did research results show adverse health effects in civilians who work in these environments?

Dr. Pierre Morisset: That's correct.

Mr. Bryan Hayes: No, that's the question. What did the research results say in terms of adverse health effects in civilians who work in these environments? Can you speak to that a little bit?

Dr. Pierre Morisset: Yes. I thought I had addressed that, but maybe I wasn't clear.

Many, many studies were done, and they were very comprehensive. They're really well covered in here; it's a good part of our report. It's very technical and it's tough slogging.

Essentially, some studies have shown a relationship, an effect. In a group of, let's say, 3,000 workers, yes, looking at the outcomes, some of them...there's a higher rate of cancer, of lung cancer, maybe. But how high? Is it statistically significant? No. Some other studies have shown that there is no effect. They basically cancel themselves out.

When you summarize all of them mathematically to see what all of these studies say, our conclusion is this. I should know it by heart, but I'll read it. We're talking about these populations that you're referring to, these workers. It says:

> There is no strong evidence of adverse health effects reported in larger civilian studies with longer follow-up periods of populations with increased exposure to uranium (e.g. uranium production and fabrication workers).

That's what we have concluded in this report.

The Vice-Chair (Mr. Peter Stoffer): Thank you very much, Dr. Morisset.

Now the committee would like to go to "Madam Butterfly"; sorry, I just had to say that.

Madame Papillon, please, for five minutes.

[*Translation*]

Ms. Annick Papillon (Québec, NDP): Thank you, Mr. Chair.

Thank you for joining us today, Dr. Morisset.

I would like to see doctors briefing us about the health of our veterans much more frequently at this committee. In my opinion, veterans are not the only ones worried about their health. It is a concern for all Canadians.

In your seventh conclusion, you say this:

> There are many veterans suffering from persistent symptoms following deployment or military conflict which…can cause considerable suffering and can be effectively treated.

That conclusion is a little different from the others. Could you shed some light on it for me?

Dr. Pierre Morisset: You want to know why we came to that conclusion?

Ms. Annick Papillon: That's right.

Dr. Pierre Morisset: That takes us back to a question that Mr. Chicoine, I believe, asked at the outset. It was all about the symptoms, really. When the Gulf War syndrome was being studied, a possible link was observed between depleted uranium and some of the chronic symptoms. That was the starting point, the first studies. So we went back to those studies. Since the link had been established at the outset…

● (0935)

Ms. Annick Papillon: I don't think it's just the Gulf War syndrome. A number of other syndromes could be identified.

Dr. Pierre Morisset: It's the starting point. That is where things started and where the term Gulf War syndrome was first used. Now, the official term is chronic multisymptom illness. To break that down, you can say that it is a chronic illness characterized by a number of symptoms.

Ms. Annick Papillon: In your medical opinion, what do we have to do? You mention an effective treatment to reduce the suffering that the veteran is going through.

Dr. Pierre Morisset: Soldiers experiencing that chronic multisymptom illness could go to a facility that is equipped to care for them.

Ms. Annick Papillon: Basically, I would like a little more stock placed in giving veterans the benefit of the doubt. As a doctor, do you think that is right for a veteran suffering an illness that he cannot explain, likely because there are no studies, no reports, that prove it exists, to have to prove that he has the illness with all the health reports and other papers that he has to submit to the Veterans Review and Appeal Board or to other agencies? Shouldn't he get the benefit of the doubt?

Dr. Pierre Morisset: You asked me what I think as a doctor. I will answer you as a doctor.

Ms. Annick Papillon: Yes, that is what I would like.

Dr. Pierre Morisset: I do not want to go about things haphazardly. As a doctor, if a veteran came to see me and told me about his problems, I would find a way to treat those problems even if there was nothing specific and even if every possible test came up negative. Is it up to the patient to prove a problem to the doctor beyond any doubt? No, the doctor-patient relationship is dynamic; it is shared.

Ms. Annick Papillon: I am happy that you are stating today that appropriate care must be given to someone asking for it.

Once again, I am asking you this as a doctor. We never have enough experts to share their expertise with us.

Can the situation in the Canadian Forces be improved right from the time that a new recruit signs on? Can we make sure that the proper tests are done at the outset and right through his service? Perhaps we could even make sure that he is monitored so that we have the evidence we were talking about. We would then be able to say that his health had been compromised during his service, when he was the Canadian Forces' responsibility, because we can see that he is having problems.

Can we not improve the situation along those lines?

Dr. Pierre Morisset: There is always a way to improve health care. We can see that in the constant increase in health care budgets.

The Canadian Forces have a good system, better, I have to say, than the civilian system in terms of monitoring. It is much better documented. Can it be improved? Probably so.

Ms. Annick Papillon: I look forward to your suggestions.

Dr. Pierre Morisset: It is not perfect, but I still have to say that it is very good.

Ms. Annick Papillon: Okay, since you are familiar with the armed forces environment, do you think that the system can be improved from the beginning?

[*English*]

The Vice-Chair (Mr. Peter Stoffer): Madame Papillon, sorry, that's it. Thank you.

We'll now go to Mr. Lizon, please.

Mr. Wladyslaw Lizon (Mississauga East—Cooksville, CPC): Thank you very much, Mr. Chair.

Welcome, Dr. Morisset, again.

Dr. Pierre Morisset: Again.

Mr. Wladyslaw Lizon: I would like to start with a question related to conclusion 7. It's on page 2 of the summary. I'll read it:

> There are many Veterans suffering from persistent symptoms following deployment or military conflict which, although not linked to specific exposures such as DU, can cause considerable suffering and can be effectively treated.

Would you agree that the symptoms may be real, but are categorically unrelated to DU exposure?

● (0940)

Dr. Pierre Morisset: That's what we say. We say that it's not related. It has not been demonstrated to be related, but it exists. Nevertheless this entity does exist. We cannot wish it away; it does exist. It's been demonstrated very clearly, not just with the Canadians but with many troops. Essentially, among troops deployed by NATO countries, a number of them come back and they're not the same, and there's nothing that shows. It's not physical. It doesn't show up in a blood test. It doesn't show up on an x-ray. It doesn't show up in anything. It is a symptom. They are uncomfortable. They can't sleep. They're bothered. There's a whole array of symptoms.

Some are more clearly defined under this broad umbrella. For example, PTSD, post-traumatic stress disorder, is more easily definable. There are diagnostic criteria that have been established. It's not related to depleted uranium. That has never been demonstrated. There is no test that you can do. There's no blood test; there's no urine test; but there is a treatment. It's not just one treatment. It's not a pill, but it's a combination of different treatments, and overall success can be achieved.

Mr. Wladyslaw Lizon: I would like to follow that with my next question, where it says the primary conclusion of the report was that the Canadian veterans never had the combined risk, proximity to depleted uranium, in such a manner that could pose a negative health risk.

Dr. Pierre Morisset: You're inventing that conclusion, because that's not what was said.

Mr. Wladyslaw Lizon: No, I'm asking.

Dr. Pierre Morisset: Oh, okay. So what's your question?

Mr. Wladyslaw Lizon: It's whether—

Dr. Pierre Morisset: —whether we believe it?

Mr. Wladyslaw Lizon: Yes.

Dr. Pierre Morisset: Well, we wouldn't have written it if we didn't believe it. But I'm not sure what your question is. Is it how strongly we feel about that conclusion?

Mr. Wladyslaw Lizon: It's whether there could be a negative health risk related to exposure to depleted uranium.

Dr. Pierre Morisset: Theoretically there could be because, as I said earlier, it does have the same toxicological risk as uranium, but it would have to be very, very high. I said that the only definitive proof we had about a very dramatic effect on the kidneys was from these accidents and these suicide attempts with uranium. So, sure it's possible. It's been demonstrated. The radiological risk is theoretical. It is plausible, but it has not been demonstrated.

Mr. Wladyslaw Lizon: No, but what I was getting at, and you mentioned it earlier in your remarks, is that from what you know about the exposure of Canadian troops, let's say in Bosnia, that should not have affected their—

Dr. Pierre Morisset: Exactly. The exposure that they may have had would be too low to produce any of these effects.

Mr. Wladyslaw Lizon: Okay.

Mr. Chair, do I have any time left?

The Vice-Chair (Mr. Peter Stoffer): Yes.

Mr. Wladyslaw Lizon: Then I would like to ask a question related to the device that—

Dr. Pierre Morisset: You want to get in on it, do you?

Mr. Wladyslaw Lizon: —my other colleague will be working on.

There is, of course, a device to measure the radiation. With a Geiger counter we can detect radiation. But if you were to try to measure their level of exposure, from a medical point of view, what would you be looking at? Would you test blood, urine, saliva, hair? What would you test?

Dr. Pierre Morisset: The most precise test would be somehow to have a sample of air deep in the lungs. That would be the most precise, because you can inhale some but it does not all go into the lungs. Some of it is brought up in the sputum and it goes into the gut and has no effect. But the actual dose, to be very precise, would be, and so on, the little probe that goes right down deep into the alveoli. That's the way you measure that.

● (0945)

Mr. Wladyslaw Lizon: Agreed, but what if you eat contaminated food?

The Vice-Chair (Mr. Peter Stoffer): Mr. Lizon, you certainly wouldn't want to cut into the time of your colleague.

Dr. Pierre Morisset: I think he might get nervous about eating the food, so to allay your anxieties about being intoxicated by uranium in the food, it's present. You can detect it in the blood, but it's not at very high levels, so it does not affect the health.

The Vice-Chair (Mr. Peter Stoffer): Thank you, Mr. Lizon.

Mr. Zimmer, please.

Mr. Bob Zimmer (Prince George—Peace River, CPC): Thank you, Mr. Chair.

Thank you again for coming, especially all the veterans in the room, and thank you as well. Thank you for your service to our country; it's much appreciated.

It was mentioned earlier by my colleague across the way that we do care about our veterans' health. Regardless of what the cause is, we still care that they're unhealthy. The purpose of this study is to affirm that this may not be the reason for their lack of good health, but nevertheless, we still care about their health.

I want to ask you whether your research was in line with that of other studies worldwide or the U.S. studies. Was it consistent with those? I know in your summary, conclusions 4 and 5 are related to this. Sometimes we ask you to repeat the obvious, but it's not obvious to the people who are going to read this later on in our report. So we would like you just to state whether it was consistent with other studies on DU.

Dr. Pierre Morisset: The comments about the consistency with other studies in the conclusion were about the larger studies. When we talk about the larger studies, these were done by the Institute of Medicine, the National Research Council in the United States, and the Royal Society in Britain. Those were the three biggies, if you wish, the most authoritative, the most comprehensive.

We read them, obviously. We read some other articles, and some of the articles we read were the very same as those they had read. But those studies were done in 2001, 2004, and 2008. We looked at them, and we also looked at subsequent studies, and our conclusions concorded with those conclusions.

Mr. Bob Zimmer: They did.

Dr. Pierre Morisset: Yes. But that is not to say every study. We're talking about maybe 1,000 peer-reviewed studies on uranium. There are very few on depleted uranium because it's been fairly recent... well, very few. There are some, but mostly they're American studies.

The models I was talking about, the live-fire models, those were very good studies. We looked at them.

There was another study we looked at, a very recent one, from France. It did essentially the same. They went *tour d'horizon*, and therefore looked at all of these studies on their workers and came to the same conclusion.

Mr. Bob Zimmer: Okay.

This is for the people who are not going to read the entire report but just hear what we have to say today. Your report, the way I've broken it down, talks about two things really. It talks about exposure to DU, and it talks about the effects of exposure. For the conclusion, and to restate what you've already said many times, although there has been exposure, you think, in your estimation, and that's what's laid out in your report, that the exposure has not caused adverse health effects to our veterans. Is that correct?

Dr. Pierre Morisset: A slight correction: there may have been exposure.

Mr. Bob Zimmer: May have been exposure.

Dr. Pierre Morisset: It does not say there has been. In fact, from the scenarios I've outlined, it's unlikely that they've had significant exposure, if any, and I repeat, if any.

Mr. Bob Zimmer: If there even was a remote chance of exposure, the chance that the exposure would cause adverse health effects is—

Dr. Pierre Morisset: We're saying that the levels at which they might have been exposed, based on the likelihood—

● (0950)

Mr. Bob Zimmer: Yes, it's presumptive.

Dr. Pierre Morisset: Yes, presumptive.

The effect—okay, those are linked, and I have to point it out. The level at which they may have been exposed would not have led to adverse health effects. This is what we're saying.

Mr. Bob Zimmer: Right.

Again, just to reaffirm what I started off, if this is one reason that we can eliminate off the list, this is what this is serving to do at the end of the day. It's not to say they're not having health issues and we need to address those, but at least this is eliminated and we can move on and find out what else is wrong.

Dr. Pierre Morisset: You're entirely correct, and as long as a veteran has these symptoms and feels this is a cause, you'll never be able to treat the person properly. That's basically what you said.

Mr. Bob Zimmer: Thank you very much for coming today.

The Vice-Chair (Mr. Peter Stoffer): Thank you, Mr. Zimmer.

That concludes round one, and now we'll go on to round two, which is a four-minute round. We'll start with Ms. Mathyssen please.

Ms. Irene Mathyssen (London—Fanshawe, NDP): Thank you, Mr. Chair.

Again thank you, Dr. Morisset. I have a number of questions and I'll try to be succinct.

We've talked extensively about the belief that there's a connection between DU and cancer, but it seems to me that the most serious effects that we should be concerned about are the very ones that are connected to the chronic symptom-based illnesses because they are very real. You indicated it was very hard to pinpoint a cause when we're looking at these symptoms, these realities, of former CF personnel.

To what degree is their treatment going to be undertaken by the military? I ask this question because you said that the CF health system is better than the civilian system. Even if they retire and leave the service, are they going to be looked after by Canadian Forces personnel?

Dr. Pierre Morisset: Canada does not have the same system as the U.S., which is their extensive network of veterans hospitals, essentially treatment centres, and so on. When a soldier leaves the forces and is officially known as a veteran, then he's treated in the civilian health sector. We do not have that kind of comprehensive health care system that looks after the veterans in the same way as the Americans have.

Ms. Irene Mathyssen: So if these symptoms persist, the veteran cannot forward look to long-term care in a veteran facility. That individual is cut off.

Dr. Pierre Morisset: Certain facilities exist, and I don't know what is offered. The one thing is they do not have access to the health care system of the Canadian Forces, so they seek service from civilian physicians.

Ms. Irene Mathyssen: In the report you said there needed to be better physician training in this connection. I worry about those veterans, because for them this reality—the headaches, the fatigue, the sleep disturbances—is very real. It seems to me that perhaps we're chasing the wrong thing here and we need to reconsider what we do for these veterans and how we ensure that their service is being respected in terms of how they're treated even after they retire.

Dr. Pierre Morisset: The doctor in me will respond. I agree with you completely. Canada has a good health care system. We all say that and we pat ourselves on the back. But I think one of the problems is that when it comes to veterans who have problems that are unique to veterans, not necessarily unique, and I correct myself because some of those symptoms, these illnesses, PTSD and so on, are not unique to the military. You see all these things in the civilian sector, but a civilian population is not necessarily tuned to the reality of what kind of life the soldier may have had. The soldier has had a health care system that has looked after him, but when he leaves and becomes a veteran in a civilian world, it's not the same. Whether improvements could be made to that is the bottom line of your question. Probably yes.

● (0955)

Ms. Irene Mathyssen: I appreciate that.

The Vice-Chair (Mr. Peter Stoffer): Thank you, Ms. Mathyssen.

Thank you, sir.

Now we'll go to Mr. O'Toole, please, for four minutes.

Mr. Erin O'Toole: Thank you, Mr. Chair, and thank you, Dr. Morisset.

Part of the challenge of going last is that a number of my colleagues covered some of the issues. As Mr. Zimmer said, I see the report as helpful in breaking down two aspects. One, is it possible CF members were exposed? Two, what are generally the impacts of DU?

I have a question on both. On the Doha fire, on page 11 you looked at both fire response and the effect of the smoke plume, and from looking at all of those groups in the total possible effect it was your conclusion that it was unlikely there was any exposure near a level that could cause an impact on a soldier. Is that correct?

Dr. Pierre Morisset: Yes.

The Doha fire was investigated very thoroughly by the Americans. It was their fire and it was their DU weapons and they had many more troops there. They did a very comprehensive review. I read that report three or four times. What they determined based on their live fire and all of these previous studies, the aerosolization studies as they call them, on how depleted uranium forms small particles and how they get into the air.... This is an aerosolization study. That formed the basis of their investigation and it was they who concluded that the level of exposure to the Canadian soldiers was *x*. It was not just the Canadian soldiers, it was anyone who may have been downwind of that plume. That level, to put it in perspective, was less than one millisievert.

One millisievert is the level that is considered to be absolutely safe and tolerable by the entire population of the world. That's the World Health Organization, ICRP, all of these organizations that have nothing to do but to make sure that they set proper levels for radiation with respect to the health of the populations. So it's less than one.

Mr. Erin O'Toole: Thank you.

Dr. Pierre Morisset: It's on that basis that we say it was level three. There was some exposure likely, sure. There was fire there, there were particles, they were more or less downwind. They may have had some.

Mr. Erin O'Toole: I'm conscious of time. Certainly, as several of my colleagues on the committee have mentioned, we do have veterans who served our country with distinction but, as Madame Papillon described it, have persistent symptoms. A lot have idiopathic illnesses, illnesses that essentially can't be attributed. It's been suggested by Mr. Casey and Mr. Zimmer that this report allows us to look at new avenues of what possibly could be causing these symptoms.

Do you find that's a conclusion you can draw from this study that given the unlikelihood of exposure, and the unlikelihood of DU presence with any of our soldiers, we should be exploring other possible causes of some of these idiopathic illnesses?

Dr. Pierre Morisset: You should track away from DU for sure.

I'll answer as a doctor. If I had a patient who had come to see me and he had the symptoms that we're describing as chronic multi-symptoms and so on, and said, "Doctor, I'm convinced that it's depleted uranium", and I would have read this report and I knew what I know now, my obligation to that soldier would be to say, "It's not that. Let's look at some other cause. Maybe we won't find that cause, but let's look at a form of treatment that will help you. It's not guaranteed, but it's where you have the best chance of being treated." This is that whole question of the various treatment modalities for the chronic multi-symptom illness. That has been reviewed very recently.

I mentioned earlier that a report has just been released by the Institute of Medicine in the United States that is seminal, and I would suggest that you read it, the summaries at least. It basically states in black and white that yes, these soldiers have these symptoms, and yes it's a recognizable entity, but no, we don't know the cause, and maybe we'll never find the cause even, although we have studied it to death. This is what this report says in essence.

It also says that there are various treatments that can be given that have a chance of helping these soldiers. That to me is what we should be doing, providing the proper treatment for our veterans. It's that simple.

● (1000)

The Vice-Chair (Mr. Peter Stoffer): Thank you, Dr. Morisset.

For the final round, we have Mr. Chicoine for four minutes.

[*Translation*]

Mr. Sylvain Chicoine: Thank you, Mr. Chair.

I have one or two questions. Afterwards, if I have any time left, I will share it with Ms. Papillon.

I have a question on technology, in response to Mr. Lobb. I think you mentioned a little earlier that nothing can measure the degree of exposure to depleted uranium or radiation.

Dr. Pierre Morisset: I have to interrupt you. Perhaps you might want to put your question another way.

It is not possible for an individual to say that at such and such an exact moment and in such and such an exact place, he was exposed to a precise amount of depleted uranium or cadmium.

Mr. Sylvain Chicoine: Are you familiar with the DT-60/PD?

Dr. Pierre Morisset: Yes, I am.

Mr. Sylvain Chicoine: What does it measure; what is it used for?

Dr. Pierre Morisset: It measures external radiation. It was used when we were preparing for nuclear war, to measure external radiation. There were significant doses of radiation following bomb detonations.

Mr. Sylvain Chicoine: Is it possible that a soldier carrying a DT-60/PD would be able to read exactly the degree of radiation to which he has been exposed?

Dr. Pierre Morisset: It is not the same kind of radiation.

Mr. Sylvain Chicoine: But soldiers could read…

Dr. Pierre Morisset: You could not draw any conclusion from it.

Mr. Sylvain Chicoine: Did you have access to any DT-60/PD data, or would they not have been…

Dr. Pierre Morisset: They would not have been of any use at all.

Mr. Sylvain Chicoine: Thank you.

Over to you, Ms. Papillon.

Ms. Annick Papillon: In your testimony, you said that, sometimes, no test can determine exactly what the veteran is suffering from, but that treatment is possible.

Dr. Pierre Morisset: Treatments are possible.

Ms. Annick Papillon: I am not a doctor, but it seems to me to be a little strange to say that there is no test, but that treatment is possible. Some administrative bodies demand certain specific tests and they must be positive in order to have access to treatments. Is there a kind of disconnect in the system?

Dr. Pierre Morisset: It is quite common. I am a doctor. If someone comes to me in tears and tells me that he is depressed, I can diagnose depression, but there is no test for depression. It is wrong to think that everything can be shown with physical tests, like blood tests, urine tests, X-rays or CT scans.

Ms. Annick Papillon: If he suffers from chronic fatigue, for example, or some persistent symptoms, he needs a note from a doctor. He has to have one so that he can…

● (1005)

Dr. Pierre Morisset: Let us make sure we understand each other. Let me play the doctor again. If someone comes to see me and tells me that he is tired, I am going to try to find clinical reasons for that fatigue. Does he have anemia; does he have cancer? I am going to eliminate causes one by one. My first conclusion is not going to be that he is suffering from chronic fatigue syndrome. For example, if I examine the thyroid gland and find that everything is normal, I examine…

[*English*]

The Vice-Chair (Mr. Peter Stoffer): Madame Papillon, I apologize, but we have gone over your four minutes. Thank you so much.

Now we'll go to Ms. Adams, please, for four minutes.

Ms. Eve Adams (Mississauga—Brampton South, CPC): Thanks, Mr. Chair.

My father actually worked in the uranium mines in Sudbury.

Dr. Pierre Morisset: Are you saying uranium mines in Sudbury or in Elliot Lake?

Ms. Eve Adams: I mean Elliot Lake. You know your Sudbury geography very well.

Dr. Pierre Morisset: Well, I'm from there.

Ms. Eve Adams: I was born there, as were my brothers.

According to your testimony, Dr. Morisset, if an individual served in the Canadian armed forces, the most likely incident for any member of the Canadian armed forces to come in contact with DU, depleted uranium, would have been the Camp Doha fire. Is that correct?

Dr. Pierre Morisset: Yes it is, from the information that we have.

Ms. Eve Adams: You also mentioned earlier, though, that an individual who has an angiogram receives 15 times the exposure that our Canadian armed forces' members would have received at Doha.

Dr. Pierre Morisset: The radiation.

Ms. Eve Adams: Radiation—

Dr. Pierre Morisset: The radiation, okay? They're not exposed to depleted uranium—

Ms. Eve Adams: No, no, but the radiation.

Dr. Pierre Morisset: —but it's the radiation effect, equivalent radiation.

Ms. Eve Adams: How often do you think Canadians have an angiogram?

Dr. Pierre Morisset: Well, I've never had one. I don't wish one on you, but—

Voices: Oh, oh!

Ms. Eve Adams: How many Canadians do you think may have an angiogram each year?

Dr. Pierre Morisset: Well, it's fairly common. What is even more common are CAT scans. CAT scans are X-rays. There are many X-rays in one exam. On average, depending on the instrument, one CAT scan will give you 15 millisieverts, which is considerable. It's external. It happens at once, but it's still radiation. That's 15 millisieverts and that's 15 times the radiation that a soldier at Doha may have had.

But it's not exactly the same, okay? It's external radiation. This is why I talked about angiography, because angiography is internal. It is something that is injected and it's inside the body.

Ms. Eve Adams: Your conclusion 3 says that it's unlikely that Canadian soldiers were exposed to harmful levels of depleted uranium. Conclusion 4 says there's no consistent evidence of adverse health effects attributed to depleted uranium in military cohort studies. Can you explain what this means specifically for Canadian veterans?

Dr. Pierre Morisset: Which one? The first one or...?

Ms. Eve Adams: The two of them, if you'd be kind enough to reconcile them. They're not quite the same thing.

Dr. Pierre Morisset: No, they're not quite the same thing.

The second one really refers to studies that were done specifically on military cohorts or groups. I referred earlier to the NATO countries study. These studies looked at cancer, mortality, and cancer incidence. The reason they were looked at separately is that these were done by different NATO countries on soldiers who had gone to different zones.

The other one is more general: “It is unlikely that Canadian soldiers have been exposed...”. Number 3 is a much broader conclusion. It looks at not just cancer and not just cancer incidence; it's less restrictive than those studies.

Ms. Eve Adams: Has there been any investigation into individuals who have had depleted uranium embedded in their bodies? Are you familiar with any of that?

Dr. Pierre Morisset: With those who have depleted uranium?

Ms. Eve Adams: Yes.

Dr. Pierre Morisset: Oh, very much so. This is the Baltimore study. We've looked at that. It's very important. That's an experiment in itself. We have a number of soldiers who have depleted uranium in their bodies through an unfortunate friendly fire situation. They have been identified. They're followed at the veterans hospital in Baltimore. They are followed regularly. They have been followed for 20 years.

What distinguishes them from others is that many of them still have depleted uranium in their bodies, and they keep excreting it, so it's like a continuous exposure. From that, you can draw certain scientific conclusions.

There are not that many of them. There are fewer than 100, but it's still the best there is, you know.

● (1010)

The Vice-Chair (Mr. Peter Stoffer): Thank you very much, Ms. Adams.

That concludes our general questioning for two rounds.

Sir, I'll take the chair's prerogative to ask you one quick question before we conclude.

Dr. Pierre Morisset: From you?

The Vice-Chair (Mr. Peter Stoffer): Yes, sir.

Dr. Pierre Morisset: Okay. I'll time you.

Voices: Oh, oh!

The Vice-Chair (Mr. Peter Stoffer): That's very good. Thank you for that.

Your committee's terms of reference in regard to the task you were asked to do were twofold: one, to review and summarize the public scientific evidence and literature on the human health effects of depleted uranium; and two, to assess the information concerning the potential exposure of Canadian military personnel to depleted uranium. Those were more or less the two points.

In conclusion 7, you state that many veterans are “suffering from persistent symptoms following deployment”, which “can cause considerable suffering and can be effectively treated”. Unlike the other committee's six conclusions, which relate directly to the scientific study, this seems to be a general statement of opinion that doesn't seem to come directly from the scientific literature you've reviewed. I'm just wondering why you or the committee thought that would be a seventh point to add in the conclusions of your report.

Dr. Pierre Morisset: When looking at the depleted uranium literature, you often come back to these hypotheses. We thought there was sufficient confusion in the minds of veterans, or anyone, for that matter, who might be reading this that we might just suggest there is a putative link between depleted uranium and these symptoms; that because these symptoms are real and affect a large number of veterans, it might be worthwhile to include them in the conclusion at the end, as a signal that there may be something else.

The Vice-Chair (Mr. Peter Stoffer): Well, sir, thank you very much for that.

That concludes our questioning for today.

Dr. Pierre Morisset: You did well.

The Vice-Chair (Mr. Peter Stoffer): Thank you, sir.

Dr. Major-General Morisset, I want to thank you very much.

Speaking to the members of your committee on this report, it was greatly appreciated. We thank you for your time.

On behalf of our chairperson, Mr. Kerr, who unfortunately can't be with us, and all of our committee, we thank you very much for your time.

We wish to also thank the committee.

I'll say to everyone here, don't forget to call your significant other and wish him or her a very happy Valentine's day.

I wish the very best to you, sir.

That concludes our meeting, unless anyone else has something burning that they wish to say.

A voice: Happy Valentine's Day!

The Vice-Chair (Mr. Peter Stoffer): Thank you very much.

It was a very intoxicating meeting, I should say.

Some hon. members: Oh, oh!

The Vice-Chair (Mr. Peter Stoffer): Thank you. We are adjourned.