

1 DR. ELIZABETH GEORGE: Hi. Thank you, Starnes. The  
2 biggest challenge we have in chemical and biological  
3 defense is detecting the attack before it happens, so we  
4 have focused our resources on responding to the attack  
5 or being able to detect the attack after it happens and  
6 then developing strategies then to counter the attack.  
7 We very much would like to move to the before-bang kind  
8 of scenario where we can actually keep an attack from  
9 occurring. So I believe that's the answer to your first  
10 question.

11 Now I'll talk to you a little bit about what we do in  
12 the chemical and biological division. We focus our  
13 resources on developing countermeasures, and  
14 countermeasures can be technology or con ops, guidance  
15 documents, that kind of thing. We develop  
16 countermeasures against chemical and biological attacks  
17 on our people, our infrastructure and our food supply.  
18 Primarily our agriculture in the animal area. We work  
19 in areas such as threat assessment, surveillance and  
20 detection, forensic support for attribution and response  
21 and recovery.

22 So now let me tell you just a little bit about what we  
23 have done and what we're doing in each of those areas.  
24 In terms of threat assessment -- and threat assessment  
25 in this case is terrorism threat and risk assessment --

1 we use that to help prioritize our resources. Because,  
2 as all of you know, we have a limited amount of  
3 resources and we have to maximize our investment. We  
4 have delivered a chemical terrorism risk assessment,  
5 biological terrorism risk assessments and just last year  
6 we delivered our integrated chem/bio radiological and  
7 nuclear risk assessment, which essentially incorporated  
8 all the information on all of the threats and put them  
9 on the same scale so we could do direct comparisons  
10 among the four threat agent categories. We also work in  
11 surveillance and detection. In chemical surveillance  
12 and detection we have deployed the Protect system which  
13 is a chemical detection and response capability that is  
14 in various transportation hubs around the country.  
15 We're now working on our next generation chemical  
16 detection systems for facilities, as well as handheld  
17 tools for responders. These are very challenging  
18 systems, the ones for responders, because they not only  
19 detect an array of chemicals; they do it at acute  
20 exposure limits as well as permissive exposure limits.  
21 So they have a wide range of detection capability.  
22 As we move into our next generation of chemical  
23 detection devices, they will have lower false positives  
24 and see multiple classes of agents very rapidly at these  
25 wide detection ranges.

1 In terms of biodetection, we employed the biowatch  
2 environmental monitoring system in 2003, and that is  
3 considered the gen 1 of the system. That particular  
4 system has a 12-to-36-hour time lag before detection,  
5 but it's been deployed to a goodly number of urban areas  
6 and provides protection or provides detection with a  
7 high confidence for a larger attack, where our gen 2  
8 system is essentially the same system put into  
9 transportation facilities, and we're now finishing up  
10 development of our gen 3 system which provides a  
11 detection response in four hours and at a higher  
12 sensitivity so that we can get a greater network and  
13 provide protection across a greater area.

14 Our next generation system will be one hopefully -- and  
15 I know people will laugh in the audience -- but one that  
16 detects something that makes U.S. sick because now we  
17 are targeting our detection capability, and with  
18 emerging and advanced and engineered threats, it opens  
19 up the space, the detection window, much larger. So we  
20 need to be prepared to deal with that. In our forensics  
21 area we have both chemical and biological forensics, and  
22 the research area primarily looks at signatures or  
23 fingerprints of a biological agent or chemical agent or  
24 its precursors that one can then draw a correlation  
25 between a particular piece of evidence and a crime scene

1 or a crime scene and a perpetrator. And we're not only  
2 looking at fingerprints or signatures of the agent, but  
3 we're also doing analysis to understand matrix effects  
4 as well. So we do physical and chemical analysis of the  
5 matrix.

6 Finally, in the response and restoration or restoration  
7 and recovery area, we are working to develop  
8 preparation, guidance and response documents for our  
9 local facility owners and emergency responders in public  
10 health that help them preposition and preplan the  
11 materials they need to clean up a facility, a  
12 transportation facility in this case, as rapidly as  
13 possible. We have developed guidance for an airport for  
14 biological. We're working on the guidance for the  
15 chemical attack on an airport. And at the federal  
16 level, at the national level we recently delivered in  
17 the federal register an overarching framework for  
18 biological cleanup, so we have made some advances there,  
19 but we still need to be able to quickly restore an area  
20 to get it back in use so that we don't completely shut  
21 down our economy.

22 So I think I've answered your second question, Starnes,  
23 and one of the things I'd like to leave you with are  
24 four take-home messages. First is that we need  
25 scientific risk assessments to help U.S. prioritize our

1 work. I just wanted to repeat that. I know I've  
2 already said it. Another point is airline detection  
3 saves lives. We've spent a lot of our effort looking at  
4 detection, environmental detection, but we need to have  
5 a national overarching biodefense architecture that not  
6 only looks at biodetection but brings in the public  
7 health information, the veterinary information, and  
8 matrixes it across local, state and federal government  
9 and the private sectors. And so this is an area that in  
10 our country we need to make investment in, and I can see  
11 how it would be an international effort that would be  
12 tailorable to a particular country, based on what their  
13 structure is.

14 I talked about response and recovery. Rapid recovery is  
15 necessary to minimize economic impact. It's probably  
16 the hardest part of the problem because we don't have  
17 good standards for cleanup, but we have to take a  
18 risk-informed optimization approach to quickly restore  
19 an area, bring it back up to use. That area needs quite  
20 a bit of scientific advancement before I feel like we've  
21 finished.

22 Finally, international collaboration is key to achieve  
23 this chemical and biosecurity that we need. I brought  
24 the ESRIIF, European Security Research and Information  
25 Forum, summary up here with me primarily because I see

1 recurring themes in all our work, and it's clear to me  
2 that we're all working toward a lot of the same goals:  
3 Preparing, responding and recovering, the countering  
4 different means of attack. It talks about the  
5 nonconventional attacks for emerging and advanced  
6 engineered threats -- again, areas that we're very  
7 interested. Finally, the securing critical assets, the  
8 Director General of enterprise and industry talked about  
9 the very large impact shutting down a subway system  
10 would have, for example. We're investing there, you're  
11 investing there. We need to invest together and we need  
12 to not only include the European Union and the United  
13 States in our discussions but also our other colleagues  
14 such as the ones in Canada and in Australia, who also  
15 actively invest in these areas. So thank you very much.

16 DR. STARNES WALKER: Just one quick question, Beth. In  
17 terms of we've heard today the importance of policy  
18 along with science and technology. And you talked about  
19 the sharing of information databases and things like  
20 this. Do you also see a role in terms of policy helping  
21 U.S. to advise better on the sharing of personal  
22 information, when it comes to medical information and  
23 things like this, which is always an issue? Because you  
24 want to have advanced warning of things evolving, how  
25 much can you share? Would you say a few words about the

1 role of policy as well.

2 DR. ELIZABETH GEORGE: Well, obviously policy is a very  
3 important factor as one's developing road maps perhaps  
4 for an R&D program. But policy also is very government  
5 specific. And so we need to get together more as an  
6 international community and talk about what makes sense  
7 in my case for chemical and biological security and then  
8 help inform our policy makers on what those  
9 conversations and those consensus decisions were. When  
10 it comes to sharing something like medical information,  
11 that really is not in the bailiwick of my division.  
12 It's more of a health and human services issue. But  
13 there are ways that one can strip personal information  
14 off of data and share that information or could roll up  
15 that information into a more -- a higher level and then  
16 share that information. So there are ways to get around  
17 that, but one has to be very careful to secure the  
18 privacy of individuals' information.

19 DR. STARNES WALKER: Of course we all come down to a  
20 risk-informed decision-making as being so important in  
21 chemical and biological in how we approach things. It  
22 also impacts how we make investments in science and  
23 technology, because we have limited amount of resources  
24 in each of our countries that go into science and  
25 technology. So it behooves U.S. to have sharing and

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1 collaboration on science and technology, but also to  
2 address the things that we are most concerned about and  
3 get a consensus as an international forum. Thank you,  
4 Beth. Okay.