

## Cooperative Demonstration of Technology on Munitions Related Contamination - short version

Military forces me to train it's crucial for preserving combat readiness developing capabilities and to keep one step ahead of the enemy. Most training is carried out on military ranges: Huge expanses of land set aside for troops, to be able to try out new weapons, technology and tactics. A problem arises however when those ranges become contaminated with toxicans from decaying munitions.

- "At some point in the future you're going to have to shut down your range and pay billions to clean up. The U.S. is going through that right now."

This military reservation in Massachusetts covers around 22,000 acres and has been used for training since the early 1900s. Below the ground lies the primary drinking water supply for Cape Cod, an area with two hundred thousand inhabitants. In the 1980s the ground water was found to be contaminated with toxicans from a decaying weapons disposal pit and jet fuel from a nearby, Air Force Base.

- "The Massachusetts military reservation has essentially been shut down, it's only small arms training now, they can't do anything higher than a 50 caliber and they're looking at 40 to 50 more years of efforts to try to clean it up."

To control risks and support range sustainability, it's important to recognize the types of residues that are released from different types of munitions during training. Some are more harmful than others. In order to quantify potential contamination, NATO has gathered some of the best scientists in this field and designed a cooperative demonstration of technology, to show NATO and partner nations how best to characterize military training ranges, for potentially contaminating munitions constituents, to ensure the sustainability of these ranges.

- "You see that more munitions facing with that issue and as environmental regulations, environmental rules, they continued to grow in various NATO nations and partner nations, which means all nations are facing the same problem. We have already achieved lot of results, we have achieved a lot of good procedures, developed good procedures, developed with tools and now there's the right point in time to share that knowledge that we have developed within the natal science and technology organization framework."

At the defence academy of the United Kingdom more than 30 representatives from 16 NATO nations and partner nations under took a course in military range characterization, to give them the skills needed to assess a range for potential contamination. The process thought the sampling of soil and water.

- "What we're looking for would be energetic residues or metals that may be here from results of training exercises."

The participants are showing ways the sample water and soil in order to transfer contaminants.

- "So what these people are doing and behind me, they're collecting multichemical sample in the 50 by 50 grid. We call that 'a decision unit' we decide what could be contaminated here, you need to take at least 100 subsample in a very specific way."

- "I'm working in a joint range where you can find the Air Force for earth to ground firing and otherwise the army from ground to ground firing and I commend the air-to-ground port. And we are cleaning the range doing a lot of stuff, but we never measure the soil pollution by the way we describe this week. So we will have to work on it I think. "

Multi increment soil sampling methods have already proven their value at sites in the US and Canada, the countries are new to the practice.

"This particular activity range remediation, could literally save billions of dollars, to any one of our nation's military and keep operational ranges in action for much greater part of the time. I hope that it will allow us to not waste money, on cleaning up ranges, so that NATO nations can modernize as they need to. The land space we have in the world, is the land space we have. Every time we lose a range, we lose the ability to train some of our young forces."

The NATO connected forces initiative requires NATO members to effectively function as an integrated force. To meet this goal Rangers must be monitored to ensure their continued availability.