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Chemical clean-up 70 years on

By Leila Fetter

The discovery of a piece of unexploded ordnance on a potential mining site would be cause for concern. But when a company found more than 140 artillery shells filled with a chemical warfare agent, Defence took the lead in making the site safe.

WHEN a former US ammunition depot at Columboola near Chinchilla in Queensland was discovered in 2009, attention focused on the issue of chemical warfare agent storage and use during World War II and the residual contamination legacy.

The Director of Environmental Impact Management, Colin Trinder, explains what happened.

“The new owners of Columboola were preparing to mine coal at the site,” Colin says.

“As their contractors were surveying the site for unexploded ordnance, they found a number of pits containing a total of 144 artillery shells filled with the chemical warfare agent Mustard H.”

This chemical agent is a direct contact hazard for skin and lungs and is also a carcinogen.

“The Columboola site itself is relatively isolated from the public,” Colin says, “but the presence of buried ordnance containing an active chemical agent at a potential mining site posed a risk to mine workers, their equipment and the environment.”

“We had to arrange the safe destruction of the munitions and a comprehensive clearance of the entire depot site to remove all detected munitions.”

The team from Defence Support Group’s National Contamination Remediation Program was tasked to coordinate destruction of the chemical munitions and site clean-up.

The site at Columboola, 330km west of Brisbane, was originally used as a US Army depot in 1942. Around this time, Australia, with US and British assistance, embarked on a campaign to counter the advance of the Japanese Imperial Army from the north.

“Under very tight secrecy, Australia acquired about one million chemical weapons, including types of mustard agents and phosgene gas,” Colin says.

“These munitions were stored at strategic locations across Australia, including disused railway tunnels and cleverly disguised ammunition depots. They were intended as a last resort in the defence of the nation and thankfully were never used, although extensive testing was carried out.”

At the end of the war, secrecy was maintained and the huge stockpile was dispersed, being dumped at sea, burned or buried.

“In the mid-1970s some efforts were made to clean up the most obvious sites where chemical agents had been used or destroyed in the war years,” Colin continues, “but it took almost 70 years for the facts to really become known.”

“The pressing urgency of the war effort had meant that little consideration was given to post-war use of these sites and the prospect of encroachment by urban or other development could not have been foreseen.”



US Army personnel prepare recovered mustard gas artillery shells for testing and destruction in Columboola, Queensland.
Photo: Defence Support Group

The 2009 discovery required a careful and coordinated response. As a signatory to the Chemical Weapons Convention, Australia has international obligations regarding the reporting and destruction of chemical weapons found on its territory. Consequently, the Australian Safeguards and Non-proliferation Office, within the Department of Foreign Affairs and Trade, and the international Organisation for the Prohibition of Chemical Weapons, were also involved in the approvals process for the munitions destruction project. Organisation for the Prohibition of Chemical Weapons inspectors visited the site prior to the munitions being destroyed.

“We also sourced some expertise in chemical munitions destruction from the US Government, through the Edgewood Chemical and Biological Center at Aberdeen in Maryland,” Colin says.

These US experts assisted in aspects of munition preparation, destruction and safety monitoring. People from the Defence Science and Technology Organisation and ADF also supported aspects of the work at key phases, and the Queensland Government assisted with emergency response support from fire and ambulance services.

Colin describes the careful destruction of the munitions. “We brought a transportable munition destruction facility to the site from the US. Each munition was detonated in a controlled explosion inside a chamber where a ‘donor’ explosive charge

destroyed both the munition and the chemical agent in one step.”

The 144 munitions were progressively destroyed during April and May 2011 with computer-controlled systems monitoring the entire process.

Colin is positive about the effectiveness of the system. “This is a highly effective way of managing all forms of waste, as hazardous gases are neutralised and solid metal waste can be disposed of appropriately to a licensed recycling facility,” he says. “The entire system is fully enclosed and all emissions and waste are monitored for the presence of any contamination. The system is effective enough to allow metal scrap to be cleaned to a standard where it is suitable for recycling.”

Following the destruction of the munitions found in 2009, a detailed survey is progressing systematically across the entire site. All metal contacts are being excavated. If no further munition items are identified, the project is expected to finish in June this year and the site will be handed back to the mining company.

“The lessons we have learned from this project about managing the risks associated with chemical agent contamination have proven invaluable,” Colin says. “It has left Australia with a lasting capability and knowledge on this type of complex clearance project.”

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A stockpile of drums of mustard chemicals at Darra, Queensland, in 1943.
Photo: Defence Support Group

