

# The Potential for Mustard and Lewisite in UXO

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According to archival research, the author discovered that Julius Nieuwland was a priest and graduate student in chemistry at Catholic University in Washington, D.C., in the early 20th Century. Father Nieuwland discovered several important reactions of acetylene. One involved arsenic tri-chloride and produced a noxious gas and tarry product. He noted it in his doctoral thesis.

In 1917, the chemistry building at Catholic University was turned over to the War Department and a team of chemists under the direction of Capt. Winford Lee Lewis began refining mustard gas. They found Nieuwland's thesis and refined his discovery into Lewisite. Dr. Joel Vilensky, Indiana University, has written an extensive history of Lewisite in a book entitled "The Dew of Death."

One hundred fifty tons of Lewisite was produced in Willoughby, Ohio and shipped to Edgewood arsenal in 516 steel 50 gallon drums. These had just arrived at the Bush River Depot when the war ended on November 11, 1917. The author believes these were dumped in the Chesapeake Bay 50 miles from Baltimore.

Lewisite was not favored by some officers because it broke down rapidly in damp foggy or rainy weather. On the other hand, a few drops on the skin can be fatal. The joke of the day with Capt. Lewis in 1917 was that if you put three drops of Lewisite on the tongue of a dog, it would kill his owner! In a telephone booth that might be true.

In deep, dark, cold water or buried underground in damp soil, neither mustard nor Lewisite breaks down, but rather turns into a tarry product by a process called polymerization. Mustard tends to turn dark gold in color and Lewisite turns black. Beachcombers sometimes find mustard chunks on the Baltic shores and get burned by it mistaking it for fossilized amber. Fishermen are frequently burned pulling up their nets mistaking the tarry mustard for ship grease called bilge.

EOD professionals can mistake polymerized mustard or Lewisite in a breached shell for cast TNT or other explosive. When heated by a donor charge, intended to blow up the mistaken explosive, the polymerized agent can vaporize back into a blister agent, burning the EOD technician.

By WWII, it was found that Lewisite and mustard could be mixed in shells lowering the freezing point of the mustard itself. Thirty-three German UBoats filled with mixed conventional and gas ordnance were sunk in the Baltic and North Seas after WWII.

Many chemical shells from Aberdeen PG were dumped offshore in the Atlantic, starting with the steamer Elinor in 1918. In the 1960s, during operation CHASE (Cut Holes And Sink Em), barges and boats of chemical ordnance were sunk along the Atlantic, Pacific, Gulf of Mexico, Hawaiian and Panamanian coasts. These were usually dumped in very deep water. However, WWII era chemical bombs, drums or one ton cylinders always contained an air space to allow the agent to expand in hot weather. This can cause thin skinned munitions or drums to float or be light enough to roll into shore in heavy weather.

Stokes Mortar (WWI era):



WW I CWN shell (Note the hex plug on ogive):



75mm Projectile with Scoville Powder Train Time Fuze found in Washington D.C. dump (not CWM):

