

The spoils of war



Explosives can be very toxic. There are many battlefields, munitions dumps and military training grounds around the world where explosives are littered. Here they can pollute the land and water. Explosives don't easily break down, so they pollute the environment. This pollution can affect the health of humans and animals and some pollutants may cause cancer.

Should we or shouldn't we?

There are now plants that can break down these pollutants in a laboratory. These plants have been genetically modified. This has taken years of scientific research to develop. The use of plants to clean up the environment is called phyto-remediation. Now these old military sites can be cleaned up.



You will debate this question and come to a decision. Our experts will help you consider all the issues involved:

Science

... the techniques used and how they work

Ethics

... thinking about rights and wrongs, benefits and costs

Law

... what are the laws in this area

Dilemma

Should we allow genetically modified (GM) plants to be used to help clean up the environment?

The Science

Some bacteria can grow naturally on explosives. They break down the explosives to less toxic materials to release energy for growth.

TNT is an explosive. These bacteria produce enzymes that make TNT non-toxic. Tobacco plants have been genetically modified to contain the genes that carry the information needed to make these enzymes to their DNA. These genetically modified plants could now help to clean these old military sites. This approach could also be used with other plants, such as trees, to clean up other pollutants.

GM facts

Genetic modification is possible because the genes of plants, animals and bacteria are all made from the DNA building blocks. A gene is a sequence of DNA.

Genetic modification can involve transferring genes between individuals of the same species, or from one organism to another of a different species.