What are the Applications for Metal Foam?

Introduction

In 1950, plant physiologist and bioethicist Arthur Galston experimented with a molecule called dioxin, which he thought would help soybeans grow better. Later on, others built on his research to produce Agent Orange—a toxic chemical used during the Vietnam War that caused long-term damage to people and environments[1] exposed to it.

Galston and other scientists were instrumental in convincing President Nixon to put a stop to the use of Agent Orange. *"I thought it was a misuse of science,"* Galston is reported to have said[2]. *"Science is meant to improve the lot of mankind, not diminish it—and its use as a military weapon I thought was ill-advised."*

This example illustrates an important point: Scientists and inventors cannot always predict how their work will be used or applied later on. On occasion, however, scientists like Galston do speak out if they notice what they consider to be an abuse or misuse of science or scientific research.

Recently, researchers at the University of North Carolina created a metal foam that pulverizes bullets that strike it. This material has enormous potential.

Vocabulary

ballistic- relating to projectiles, in this case bullets
composite- made up a multiple parts

Note-worthy

Write down information from the radio excerpt and article that you want for your discussion or writing piece.

[1] Fuller, Thomas. "4 Decades On, U.S. Starts Cleanup of Agent Orange in Vietnam." *The New York Times*, 09 Aug. 2012.
[2] "In Memoriam: Arthur Galston, Plant Biologist, Fought Use of Agent Orange." *Yale News*, 18 July 2008.

Discussion Questions

Use the boxes below to record thoughts and interesting ideas during your group discussion.

GENERATE IDEAS: Professor Afsaneh Rabiei talked about four possible applications for this metal foam, including body armor, car bumpers, and trains. With your group, discuss other possible applications for this technology.

Does the potential good of metal foam outweigh the possibility that it could be used in a way that is harmful or negative?

Do scientists and the public have an ethical responsibility to make sure technologies like metal foam are used in a way that protects instead of harms living things? Why or why not?

GENERATE IDEAS: How would you ensure the positive use of a technology? What would you do to stave off potential harmful applications? How would your plan be enforced? Who would you involve?

Student Writing Prompt

Professor Afsaneh Rabiei stated that she "...originally started making this material, not necessarily for armors, but more for cars and trains...." This metal foam technology has a wide array of possible uses. Should scientists and the public be allowed to limit who can use this technology and how it can be used?

Ideally writing responses should:

- State whether the student agrees or disagrees and provide a claim statement.
- Support that claim with reasoning and evidence.
- Address a counterclaim.
- Incorporate evidence from the media.