



# DDT: Indiscriminate killer of discriminating science?

## CASE STUDY

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*This case study highlights three tactics of science misinformation and disinformation efforts: neglect of refuting information, personally attacking scientific experts, deviant criteria of assent for accepting scientific ideas, and putting forth conspiracy theories. See **Characteristics of Science Misinformation/Disinformation Efforts** for more information regarding these tactics and **Water Fluoridation: Misuse of Valid Science to Create Doubt** for the companion story to this case study.*



Numbered red flags refer to descriptions of misinformation and disinformation provided at the end of the case study.

Standing at your mailbox after work one evening, a nearby discussion immediately grabs your attention. You recognize the chatty group as your neighbor, Riley, and friends Morgan, Casey, and Sandy. Supposedly, one of their classmates brought “an old can of poison” to show the science teacher today. You cannot help but eavesdrop on their conversation.

**Morgan:** I'm telling you; I saw the label. It wasn't a poison. You can't bring poison to school, Riley.

**Sandy:** Yeah, it was just DDT (dichloro-diphenyl-trichloroethane) - an insecticide developed in the 1940s that worked really well.

**Riley:** DDT is a poison. You heard Miss Welker, in the 1940s DDT was linked to the death of fish, crabs, birds, and insects. In the 1950s there was a ton of evidence that stuff was bad for you. Rachel Carson later wrote about the detrimental effects of DDT at the ecosystem level. Since then, the EPA has issued an official statement banning the chemical siting studies that show those adverse effects, as well as reproductive and cancers risks in humans based on studies in animals (EPA, 2022). Unfortunately, Carson and the Environmental Protection Agency were the target of unfair attacks from some advocating the use of DDT.



DDT storage container (1)

**Sandy:** EPA! I love to see people harassing the EPA. They are funny AND it ties up resources so they can't peddle the green propaganda.



(1) Retrieved from <https://i0.wp.com/conservationdistrict.org/wp-content/uploads/Pestmaster-with-DDT.jpg?resize=169%2C300&ssl=1>

**Riley:** What is wrong with you? Personal attacks on people trying to do their job isn't something to laugh about. Scientists don't just pick the results of their experiments out of a hat. Going after scientists just because you don't like those results is a sign you can't hold an argument.

***How can attacking the character of and waging legal battles against scientists and research groups facilitate misinformation and disinformation spread and be used to cast doubt on well-established science ideas?***

**Casey:** Forcing scientists and scientific organizations to waste time and money is a bully move that all of society pays the price for.

**Morgan:** To be fair, people might be less defensive if scientists were not so overreaching.

**Riley:** What do you mean by overreaching?

**Morgan:** You know, scientists don't stay in their lane. They don't stick to the science. In the case of DDT, scientists should simply present possible effects of the chemical rather than demanding everyone conform to whatever other goals they have.

**Casey:** You are just saying that because your family farms and you want to use DDT.

**Morgan:** No! It's about the principle! *Scientists* should keep to their *science* and stay out of regulation. Overreaching regulation can upend years of best practices and place unnecessary burdens on producers. DDT is one of many examples in the long history of science leading to regulation.



**Riley:** Morgan, one purpose of regulation is to protect people. Sometimes, the *implications* of scientific ideas can go against people's worldviews or feel threatening to them, but that doesn't mean the science ideas are wrong, or that the scientists are "outside of their lane". In all likelihood, scientists from the relevant field are the *most* qualified to inform policymakers who create regulations.

**Why do some people feel threatened when their worldview conflicts with scientific ideas and the regulations policymakers create based on those ideas? How can feeling threatened in this way: 1) cause people to be more susceptible to, and 2) motivate their perpetuating, misinformation/disinformation?**

**Casey:** The truth of the matter is that DDT is prone to long-range transport leading to greater environmental contamination (Walker et al., 2003). Basically, it travels farther through the atmosphere and the bird poisoning and eggshell thinning affect an even greater distance.

**Sandy:** Those are just birds. What about the people who die from malaria? DDT is practically responsible for the elimination of malaria in America. DDT kills insects that spread malaria.

**Riley:** Ahem, let me do my Miss Welker voice... "The rate of malaria in the United States had been declining

NO LONGER ENDANGERED



BALD EAGLE  
DUE TO BANNING OF DDT

STILL ENDANGERED



MALARIA VICTIMS  
DUE TO BANNING OF DDT

for years before DDT because of improving living conditions as cited in Berry-Cabán, 2011. 50 million dollars were spent between 1942 and 1950 on controlling malaria, yet there was so little malaria in the United States by 1943 that researchers had trouble finding it as cited in Humphreys, 1996.”

**Sandy:** DDT is practically responsible for the elimination of malaria in America. DDT kills insects that spread malaria. Malaria is still out there in other places and we could kill the bugs that spread it.



**Casey:** You just repeated yourself! Riley even hit you with Miss Welker's citations. Outright ignoring evidence that doesn't fit your argument can be a sign of denialism.

***Why are people often tempted to reject reliable scientific information that conflicts with their own interests? How can that stall progress toward effectively resolving issues such as DDT?***

**Morgan:** Okay, but the issue is still not as simple as you're making it out to be. Some countries could save millions of dollars that go towards treating malaria, and millions of lives as well.

**Using the information from the case study and other credible sources (e.g., your course content) answer the following questions.**

***How might the features of misinformation and disinformation associated with DDT impact peoples' thinking and decision-making?***

***How might personal and group-reinforced emotions and biases influence thinking and decision-making regarding this issue?***

***Regulating your own emotions and personal biases and citing multiple lines of credible evidence (scientific, economic) as well as ethical and social considerations, propose a resolution regarding the use of DDT on local crops.***

## RED FLAG GLOSSARY



### ***Personal attacks on legitimate scientists***

Those promoting misinformation/disinformation will at times mount serious personal and legal attacks on researchers publishing and presenting peer-reviewed studies that debunk or are at odds with the misinformation/disinformation.



### ***Science perceived as threatening worldview***

Everyone possesses a worldview comprised of personal ideologies, beliefs, values, assumptions, and attitudes that acts as a lens through which experiences and decisions are filtered. Behind some misinformation/disinformation efforts is the perception that the established science idea being targeted contradicts a group's worldview in an irreconcilable way.



### ***Neglect of refuting information***

Even though well-established scientific knowledge is potentially open to revision, this does not mean such knowledge is easily changed. Widely encompassing scientific ideas are often faced with anomalies, but the crux of the matter is that comprehensive ideas are not discarded simply because some pieces do not fit. Misinformation/disinformation sources are different in that they often selectively ignore well-established and comprehensive evidence in order to maintain ideas that have been thoroughly refuted by the community of relevant science experts.

## References:

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