

Sap Comments (CDC)

From: Jaynes, William [william.jaynes@ttu.edu]
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To: Sap Comments (CDC)
Cc: Zartman, Richard; Roe, Matt
Subject: Comments on changes to the list of select agents and toxins.

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Comments on review and republication of 42 CFR Part 73 concerning Select Agent, ricin. Dr. William F. Jaynes and Dr. Richard E Zartman, Texas Tech University.

Should ricin in any form be classified as a Select Agent? Ricin is a natural toxic protein that can easily be extracted from readily-available castor seeds. The toxic effects of ricin are far more limited than biological weapons, such as anthrax. It might be more useful to clarify the purity or form when ricin becomes a Select Agent. Castor seeds and castor-seed extracts are toxic, but a “weaponized” ricin that can be inhaled is 80 or more times as hazardous. Highly-purified ricin powder is clearly a good Select Agent candidate, but should castor-seed extracts and ricin-contaminated media be classified as Select Agents?

Castor seeds contain ~50% castor oil and 1-5% ricin toxin by weight, but many other plants also contain toxins. Historically, castor was cultivated in the U.S. for the oil, but most castor oil is now produced in Asia. Castor oil use for biofuel production will likely increase castor production in the U.S. Castor plants are common ornamental plants and unregulated castor seeds can be purchased from most seed catalogs. Highly-purified ricin should clearly be regulated, but at what ricin content should castor seed extracts be regulated if at all?

We use castor seeds and ricin in research funded by the U.S. Army Zumwalt Countermeasures to Biological and Chemical Warfare program. Research that we published several years ago on ricin sorption to soil clay minerals would now be far more difficult if not impossible to complete under the current Centers for Disease Control (CDC) interpretation of 42 CFR Part 73. The fate and mobility of ricin that is intentionally or accidentally dispersed in the environment is affected by sorption to soil mineral particles. Criminalizing scientific research on ricin serves no useful purpose and protects no one.

We recently applied several times for exclusions to 42 CFR Part 73 for castor seed extract and castor seed extract-contaminated soils. The CDC has interpreted 42 CFR Part 73 to mean that the total ricin in aqueous castor seed extracts regardless of concentration counts toward the total quantity of ricin (100 mg) that a research laboratory can possess. The CDC has interpreted the law to mean that water extraction changes unregulated castor seeds into Select Agent ricin regardless of ricin purity. This CDC interpretation limits research efforts because any ricin separated from castor seeds using water, regardless of ricin purity, counts toward the 100 mg limit. Most of the soluble material in castor seed extracts is not ricin. We can obtain unlimited quantities of castor seeds with ~5% ricin, but any quantity of soil contaminated with the castor seed extract from 7 seeds would exceed the 100-mg legal ricin limit for our laboratory. One ton of soil contaminated with castor extract from 7 seeds should not be considered a Select Agent. More reasonable guidelines need to be promulgated.

The CDC interpretation of the law unreasonably criminalizes legitimate research efforts. A castor seed-extract with 1% ricin is no more toxic than castor seeds with 1% ricin.