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LD50: A Cruel Waste of Animals

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Imagine a test in which up to 100 animals are forced to consume a toxic substance in an amount high enough to kill half of them. Then imagine that the explicit purpose of the test is to kill those animals. Incredibly, such a test not only exists but each year also claims the lives of from two to four million animals.

The test is the lethal dose 50, or LD50 as it’s commonly called. Its purpose is to measure the toxicity of a substance by determining how much of that substance will kill half of a group of some 60-100 test animals in a specific amount of time.

The HSUS believes that inducing untold suffering in animals in order to provide questionable data can no longer be tolerated. Here in Washington, D.C., we are spearheading a drive supported by hundreds of animal-welfare groups across the country to force the federal government to call a halt to this unconscionable activity.

The LD50 was developed in 1927 for the purpose of standardizing new batches of drugs to make sure that what was a safe dose from one batch would not be an unsafe one from the next batch. Over the years, however, use of the test has been broadened to the point where it has lost all its usefulness and become wasteful and arbitrary. For instance, one scientist actually used the test to find out the LD50 level of distilled water!

More and more scientists, however, are stepping forward to decry this test, once described by one consultant toxicologist for the World Health Organization as “a ritual mass execution of animals.” What tests we do need, they say, should measure the safe doses of substances rather than the fatal ones. Yet many federal agencies still require that this death test be performed before new substances may be marketed or transported across state lines.

While it is important for scientists to know how poisonous certain substances are, it is of little use to them to know the exact amount of a dishwashing detergent needed to kill half of a group of 100 rats. Late last year, the Pharmaceutical Manufacturers Association (PMA) called for the government to change its regulations to elimi-
What Is The LD50?

The LD50 is a test specifically designed to kill animals. That is its raison d’être. The test may be administered in a variety of ways. The internal LD50 involves forcing the test substance into a living organism. The inhalation LD50 forces the test substance to breathe the test substance. The dermal LD50 involves forcing the test substance in a vapor or spray. In the oral LD50, a portion of the test animal’s coat is shaved and the substance applied directly to the skin. There are also intravenous LD50s in which the substance is injected into the animal and even LC-50s, which measure the lethal concentration of a substance in water and is tested on fish.

Internal LD50s are the most common. The researcher uses a syringe with a tube attached to pump the test substance directly into the animal’s stomach. Mice, rats, and guinea pigs are the most common LD50 victims. In a standard test, several groups of ten animals (five males and females in each group) are given different amounts of the test substance. The animals may exhibit a variety of symptoms—including convulsions, paralysis, tremors, and an inability to breathe. They are observed twice a day for two weeks and their symptoms recorded. The ones who die during the test period are dissected to see how the test substance affected their internal organs and systems. The ones who survive—those that make it past the first and second tests—are also killed after the two weeks to be dissected and analyzed. From this data, using statistical charts, the LD50 value is determined. Then, the information is sometimes used as a baseline figure from which to do other toxicity studies. More often, however, the numbers simply go into a file, never to be used or studied again.

While it takes from 60 to 100 animals to determine a statistically precise LD50 value, it takes only 6 to 10 animals to determine approximately how toxic a substance is. Yet, modulated and unscientific industry standards and federal regulations continue to call for the needlessly precise LD50 value when an approximate lethal dose value—using one tenth as many animals—would be just as useful.

What The HSUS Is Doing

The Environmental Protection Agency (EPA) explicitly requires that LD50 values be provided for any new pesticide before it can be registered for sale. However, many other agencies, including the Consumer Product Safety Commission (CPSC), the Food and Drug Administration (FDA), and the Department of Transportation (DOT), while not actually demanding LD50s, do require explicit measures of toxicity—measures that in many cases can be met only by providing LD50 information. What’s more, these federal agencies, despite scientist and industry pleas to end the need for massive numbers of LD50s, are refusing even to consider banning the test. A recent letter from a Department of Transportation official to The HSUS stated that its regulations “do not require determination of a precise LD50 or LC-50, only a determination as to whether a material has a toxicity at or below a certain breakpoint.” On the other hand, he continued: “At present, it is our view that the benefits of using the LD50 as the bench mark criterion for declaring that material is a poison... far outweigh the concerns expressed about using live animal tests.”

It is clear that extreme pressure, not only from industry groups, but from dermal LD50 advocates and the general public, must be brought to bear before these federal agencies will cease to force the unnecessarily and implicitly, this gruesome and needless test. It is estimated that there are 4.8 million chemical entities known to man. When you consider that every year, tens of thousands of new entities are added to our lists, it is hard to figure out why federal laws are needed to ensure that the public isn’t subjected to hazardous substances in dangerous amounts. Unfortunately, however, both government and industry still focus on the LD50 as the definitive test.

What The LD505 Is

In this country, shortly after the Pharmaceutical Manufacturers Association came out against the LD50, the National Society for Medical Research (NSMR) issued its own policy statement on the subject, stating that “It is the opinion of the NSMR that the quantitative LD50 test is not now scientifically justified... Because differences do exist in the effects of drugs on different species of animals, or on newborn and mature individuals, it is more important to accu­rate and to determine the extent of any differences. This can be done with the approximate LD50 measurements, still using fewer animals than are necessary for the precise determination.”

Having government and industry realize how worthless the LD50 test is and getting them to actually stop using it, however, are two very different tasks. We must apply enough pressure to force those who now kill animals needlessly with the LD50 to seek a non-animal replacement for determining the toxicity of a substance.

In 1983, the government of West Germany recognized the idio­cy of the LD50 and stated that it was prepared to reduce the number of ani­mals required for the LD50 by 75 per­cent, sparring an estimated 130,000 ani­mals annually, according to a report in The Economist magazine.

The HSUS is determined to end the use in this country of the cruel and wasteful LD50 test. Because most of the LD50 testing that occurs in this nation is carried out in an effort to meet the regulations and requirements of certain federal laws, we are trying to convince federal agencies that they must cease to insist on this wasteful destruction of research animals. We are marshalling scientific arguments against the LD50 and
seeking to ban the test. We have already contacted all the pertinent federal agencies requesting that they modify current regulations so as not to require the test. Should this not prove successful, we intend to file a formal petition proposing that they change their regulations and end the use of the LD50.

We are also helping to lead a coalition of animal-welfare groups in efforts to bring to the public the horrors of the LD50. It may take a full public revolt to convince government and industry that finding alternatives to the use and abuse of laboratory animals should be a major priority and that the LD50 is a particularly good candidate for the trash heap.

WHAT YOU CAN DO

It was pressure from millions of citizens just like you that helped us convince the cosmetics industry of the importance of seeking an alternative to the Draize test. You can be just as instrumental bringing an end to the cruel LD50. Here are a few things you can do:

- Write to President Reagan (c/o the White House, 1600 Pennsylvania Ave., NW, Washington, D.C. 20516). Tell him to direct the EPA, CPSC, FDA, DOT, and other agencies that require LD50 information to change their policies and forbid use of the test for their purposes. Explain that approximate lethal dose information is just as useful and would save the lives of millions of laboratory animals.

- Write your U.S. representative (c/o House Office Building, Washington, D.C. 20515) and your senators (c/o Senate Office Building, Washington, D.C. 20510). Urge them to actively support and vote for legislation that encourages the development of non-animal alternatives for research. Such legislation could foster the development of a substitute not only for the LD50 but also for thousands of other cruel and painful animal experiments that could be more cheaply and accurately performed without using animals.

- Try to avoid buying new products on the market. Unless the labels specifically say they were not tested on animals, all new consumer products, including many “new and improved” versions of old products, from toothpaste to oven cleaners, were tested at the expense of animal lives. Sticking with established products already on the market can cut down the need for LD50 tests until we have abolished them.

- Finally, help The HSUS help the animals. We are working not only to end the LD50 but also to find non-animal alternatives. Our work ranges from preventing shelter dogs and cats from becoming research subjects to ending the needless and cruel use of primates in the nation’s primate centers. Your tax-deductible contribution will help us continue our programs to alleviate the suffering not only of laboratory animals but of other animals as well. Please use the enclosed postage-paid envelope to send your gift today.