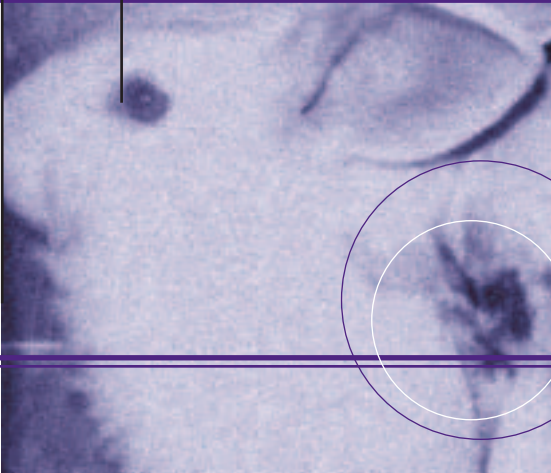
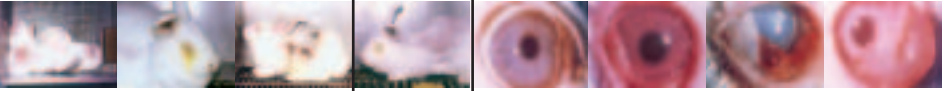


# What's wrong with Animal Testing?



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[www.choosecrueltyfree.org.au](http://www.choosecrueltyfree.org.au)

# Resources

'Models', 'test systems', 'research tools', 'products'; euphemisms for these animals that are called anything but living, feeling, sentient creatures. This book was designed to put forward some arguments against animal experiments. It was produced by Choose Cruelty Free (CCF), an independent, non-profit organisation which actively promotes a cruelty-free lifestyle. The following are some resources to help you on your journey toward learning the truth about animal experimentation and the cost to us and the other animals.

## **BUAV**

The British Union for the Abolition of Vivisection is the world's leading anti-vivisection campaigning organisation. The BUAV is dedicated to using all peaceful means possible to end all animal experiments, both nationally and internationally. Through public campaigning, hard-hitting undercover investigations, media activities, celebrity support, political lobbying, corporate relationships, legal and scientific expertise and quality educational and information materials, the BUAV spreads its campaign message to as wide and diverse an audience as possible. [www.buav.org](http://www.buav.org)

## **AAHR**

The Australian Association for Humane Research Inc. is an information service attempting to bring to the attention of the public the ethical and scientific arguments against the continued use of animals in research, and to counter the false claims made by the animal research lobby for over a century. [www.aahr.org.au](http://www.aahr.org.au)

## **NAVS**

The National Anti-Vivisection Society is dedicated to abolishing the exploitation of animals used in research, education and product testing. [www.navs.org](http://www.navs.org)

## **Resurgence**

Resurgence is the leading international forum for ecological and spiritual thinking, where you can explore the ideas of the great writers and thinkers of our time, both in print and online. [www.resurgence.org](http://www.resurgence.org)

## **Nexus**

An international bi-monthly alternative news magazine, covering the fields of: health alternatives; suppressed science; earth's ancient past; UFOs and the unexplained; and government cover-ups. [www.nexusmagazine.com](http://www.nexusmagazine.com)

## **PETA**

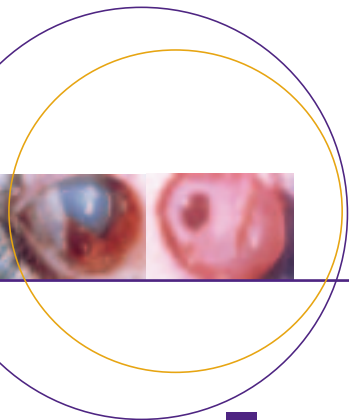
People for the Ethical Treatment of Animals is the largest animal rights organisation in the world. Founded in 1980, PETA is dedicated to establishing and protecting the rights of all animals. PETA operates under the simple principle that animals are not ours to eat, wear, experiment on, or use for entertainment. [www.peta.org](http://www.peta.org)

## **The Animals Voice**

The premiere online resource for helping animals. An award-winning, independent, networking source of recent media coverage, information, and an incalculable volume of resources for animals and their defenders. The latest animal rights news, multimedia, calendar, victories, thought-provoking and inspirational editorial, graphic and compelling photography, and in-depth investigative reports. [www.animalsvoice.com](http://www.animalsvoice.com)

## **ALV**

Animal Liberation Victoria Inc. is an abolitionist organisation dedicated to helping all animals with a strong focus on those factory farmed. The underlying goal of ALV is to abolish the property status of animals. ALV is located in Melbourne and is acknowledged and respected as Victoria's most powerful animal rights organisation. [www.alv.org.au](http://www.alv.org.au)



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**The majority of companies that produce cosmetic/household products test their products and/or ingredients on animals. These tests are cruel and the results are inaccurate and even misleading.**

## Scientifically flawed

**A**nimal toxicity tests are crude, subjectively assessed and the results can vary depending upon the species, age, sex and condition of individual animals. One international study that examined the results of rat and mouse LD50 (Lethal Dose 50%) tests for 50 chemicals found that these tests were able to predict toxicity in humans with only 65% accuracy. (1) (see page 17)

Dr Robert Sharpe, research chemist, states, "The LD50 for digitoxin in rats is 670 times that in cats, whilst for the antifungal substance antimycin, the LD50 in chickens is 30–80 times greater than in pigeons and mallards. The LD50 of thiourea in the wild Norway rat is 450 times greater than in the Hopkin's stain of rat." (2)

**Manufacturers are simply asked to conduct whatever tests are appropriate, in their opinion, to establish that their cosmetics or household products are safe.**

Even the environmental conditions in a laboratory can affect results. The LD50 results for the same chemical can vary widely between different laboratories.

It's hardly surprising then to learn that results from animal tests are often difficult to apply to humans. Many substances tested safely on animals have proven to be dangerous to humans and vice versa.

## The real reasons

Animal tests were crudely developed as long ago as the 1920s and became commonplace in the 1940s. Scientists are familiar and comfortable with the animal-based techniques they have been using for years. It is always difficult to change the status quo. Companies continue to test on animals for legal



protection. Animal testing is designed to protect a manufacturer against legal claims by consumers.

The irony is that the defence "we have safety-tested our products on animals" only becomes relevant when that testing fails to detect a potentially dangerous substance and a consumer is injured. There is no actual legal requirement for animal testing. Manufacturers are simply asked to conduct whatever tests are appropriate, in their opinion, to establish that their cosmetics or household products are safe.

The use of animals in laboratories is supported by a very large and powerful industry. It includes contract testing laboratories, the suppliers of cages, equipment, animals, and infrastructure.

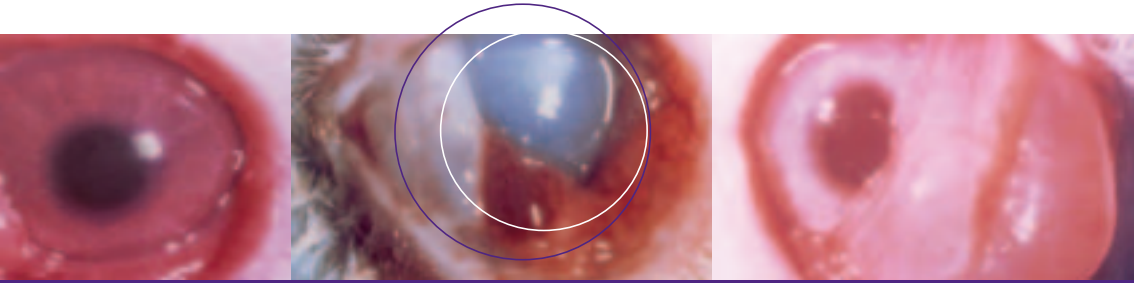
## Alternatives to animal testing

Today, many cosmetic and household product companies have turned their backs on animal testing and begun taking advantage of the many sophisticated non-animal test methods available, which range from cell and tissue cultures to computerised "structure-activity relationship" models. Human cell culture tests have been found to predict toxicity in humans with much greater accuracy than animal tests.

(1) R. Poggeband et al., "Eye Irritation Responses in Rabbit and Man After Single Applications of Equal Volumes of Undiluted Model Liquid Detergent Products," *Food and Chemical Toxicology*, 38 (2000): 727-734.

(2) Dr Robert Sharpe, "The Cruel Deception".

# Anima! 'models' are not predictive



Rabbit's eyes in various stages of destruction and ulceration following Draize eye test.

## Animal tests can be dangerously misleading and has cost the health and lives of tens of thousands of humans.

Open up a rat, a dog, a pig and a human and you will find much the same terrain, but with many intricate differences. It is precisely these differences which have an impact when it comes to assimilating drugs. For example, rats, the species most commonly used in vivisection (1), have no gall bladder and excrete bile very effectively. "Many drugs are excreted via bile, so this affects the half-life of the drug," explain Ray and Jean Greek. "Drugs bind to rat plasma much less efficiently. Rats always breathe through the nose. Because some chemicals are absorbed in the nose, some are filtered. So rats get a different mix of substances entering their systems. Also, they are nocturnal. Their gut flora are in a different location. Their skin has different absorptive properties than that of humans. Any one of these discrepancies will alter drug metabolism." These differences are on a gross level. Medications act on a microscopic level, initiating or interrupting chemical reactions that are far too small for the human eye to observe. "We differ on the cellular level and molecular level and, importantly, that is where disease occurs," the authors explain. "The cells of chimps are very similar to the cells of humans, but the spatial organisation of the cells is vastly different."

Even those who favour the animal model admit its unpredictability among their peers. Dr Ralph Heywood, director of Huntingdon Research Center in the United States, says: "The best guess for the correlation of adverse reactions in man and animal toxicity data is somewhere between five and 25%."

## ...a game of chance

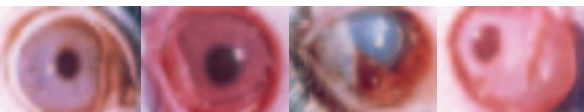
Dr Herbert Hensel, Director of the Institute of Physiology at Marburg University, goes further: "In the opinion of leading biostatisticians, it is not possible to transfer the probability predictions from animals to humans. At present, therefore, there exists no possibility at all of a scientifically based prediction. In this respect, the situation is even less favourable than a game of chance."

Even the most widely respected textbook on animal experimentation states: "Uncritical reliance on the results of animal tests can be dangerously misleading and has cost the health and lives of tens of thousands of humans."<sup>(2)</sup>

The best-known example of this is thalidomide. Mothers who took this drug to relieve morning sickness gave birth to children with shocking deformities, with most lacking developed limbs. Animal tests had not predicted this. The first recorded case of side effects occurred on Christmas Day 1956, but in 1957 the drug was released anyway.

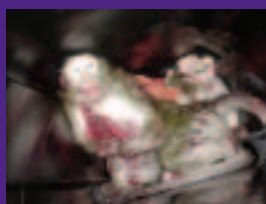
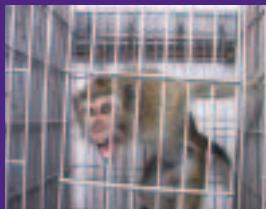
(1) Vivisection refers to the dissection of, or any cutting or surgery upon, a living animal. More generally, it is used to describe any invasive experiment upon living animals, or any live animal testing, typically for the purpose of physiological or pathological scientific investigation.

(2) Svendsen, Per, "Laboratory Animal Anaesthesia", in Handbook of Laboratory Animal Science (P. Svendsen and J. Hau, editors), CRC Press, vol. 1, p. 4.



## Inside Covance

The BUAV exposed the horrific suffering of thousands of monkeys subjected to a life of deprivation, fear, torment and toxic poisoning in the first ever undercover operation inside a German laboratory. [www.buav.org/covance/inside](http://www.buav.org/covance/inside)



by Dr Ray Greek MD

**Many people are morally opposed to experiments on animals, even if they are of supposed medical benefit. Such people are often portrayed as wishing to sacrifice medical progress to avoid animal suffering. The government and the media dismiss their concerns by labelling them 'anti-science': a convenient, but totally false, stereotype.**

**B**ut what if there were no medical benefits from experiments on animals? What if they were actually an obstacle to medical progress: misleading scientists, harming patients by their unreliability and wasting precious funds that would be better spent on patient-oriented research?

If that were really the case, then stopping animal experimentation would be in everyone's best interests: truly a win-win situation!

Clearly, a careful study of the medical literature is required in order to make an informed judgement. After completing our medical and veterinary training, my wife and I spent ten years doing just that before we wrote our first book, *Sacred Cows and Golden Geese: the Human Cost of Experiments on Animals*. We reviewed thousands of scientific papers and examined the history of medicine at length. We found precious little evidence of human benefit but abundant evidence of human harm. The common claim that "all medical breakthroughs rely on animals" strikingly demonstrates how repeated lies can be perceived as truths.

Dr Albert Sabin, the inventor of the polio vaccine, regretted that the vaccine was "long delayed by the erroneous conception of the nature of the human disease based on misleading experimental models of the disease in monkeys". Heart-valve replacements, penicillin and many other therapies were similarly delayed because of misleading test results in animals. People died as a result of those delays. Smoking cigarettes and eating lots of cholesterol were given the thumbs-up by animal experimentation. Probably no

# animals only benefits big business

two mistakes have cost as many lives. Now millions of women on hormone replacement therapy are at twice the risk of breast cancer and heart disease, thanks to tests in monkeys which predicted the opposite. How many more people have to die before we admit there is a problem with animal testing?

It is commonly known that cancer, heart disease and stroke are the leading causes of death in the West. But many people would be surprised by one of the next biggest killers: side effects of prescription medicines. Adverse drug reactions kill over 100,000 people a year in the US and almost as many in the UK. That is more than all illegal drugs combined.

Clearly, there is something very wrong with the way drugs are screened for safety before being sold. One of the major problems is testing on animals. Animals metabolise drugs differently from humans: thus substances which are safe for dogs or rats may not be safe for people. For example, Rezulin (for diabetes) passed animal tests with flying colours but killed thousands of people before it was withdrawn in 2000. Penicillin - such a valuable drug for humans - kills guinea pigs and hamsters. Experiments on rats cannot predict which substances will cause cancer in mice, and vice versa - so how on earth can they predict which will cause cancer in humans?

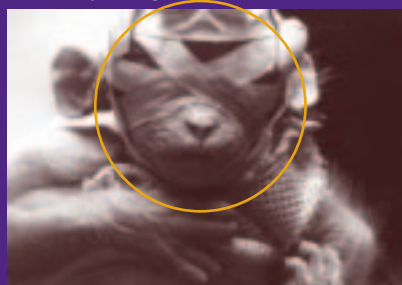
Overwhelming evidence shows that testing drugs on animals is meaningless for humans, with a successful prediction rate for side effects of only 5-30%. For example, in a review of drugs withdrawn from the market (1960-90) only four out of 24 side effects were predicted by animal tests. In another review only six of 114 human toxicities had animal correlates. Tossing a coin would predict drug safety better than animal tests - even a former Director of Huntingdon Life Sciences (1) admits that!

Professor Andre McLean of University College, London said: "Yes, I think it is very clear to all of us who are engaged in the business of assessing toxicity data that...very often the carcinogenicity studies are a waste of everybody's time and a fearful waste of animals. They are conducted partly because we are not sure what to do instead, and partly because they are a political gesture and a very miserable one at that."

Drugs would be much safer for patients if they were tested not in animals but in human tissues, human DNA chips, computer models of human organs and finally in risk-free micro-dose studies in human volunteers. We are entering an era of personalised medicine, where individually tailored prescribing will make drugs much safer and more effective.

The great breakthroughs in science that have given us all the medical advances we enjoy today have actually come from ethical, human-based research - most notably astute clinical observation, epidemiology (population studies), autopsies and in vitro (test-

**Britches** was the name given by researchers to a stumptail macaque monkey who was born into a breeding colony at the University of California in 1985. He was removed from his mother at birth as part of a psychology experiment into maternal deprivation, and had his eyelids sewn shut as part of a three-year sight-deprivation study involving 24 infant monkeys. Britches was removed from the laboratory, along with 700 other animals, when he was five weeks old during a raid by the Animal Liberation Front (ALF). The ALF made a videotape of their raid and of Britches' condition when they found him. As a result of the publicity when the video was released by PETA, and after condemnation of the experiments by scientists and the American Council of the Blind, eight of the 17 studies interrupted by the raid were not restarted, and the university stopped allowing baby monkey's eyes to be sewn shut, according to reports filed by the university with the government. Dr. Grant Mack, president of the American Council of the Blind, called the experiment "one of the most repugnant and ill-conceived boondoggles that I've heard about for a long time." [www.wikipedia.org](http://www.wikipedia.org)



## Does the end justify the means?

They wouldn't do the experiments unless they were important to the wellbeing of humankind. Should I refuse treatment because a few rats were sacrificed for science?

### Inflammatory bomb experiments

To test the effect of various pharmaceuticals on phosphorous burns. These burns were inflicted on the victims with phosphorous matter taken from incendiary bombs, and caused severe pain, suffering, and serious bodily injury.

### Freezing experiments

To investigate the most effective means of treating persons who had been severely chilled or frozen. The victims were forced to remain in a tank of ice water for up to 3 hours. Extreme rigor developed in a short time. Numerous victims died in the course of these experiments. After the survivors were severely chilled, rewarming was attempted by various means.

### Sea-water experiments

To study various methods of making sea water drinkable. The victims were deprived of all food and given only chemically processed sea water. Such experiments caused great pain and suffering and resulted in serious bodily injury.

### Malaria experiments

To investigate immunization for and treatment of malaria. The victims were infected by mosquitoes or by injections of extracts of the mucous glands of mosquitoes. After having contracted malaria the victims were treated with various drugs to test their relative efficacy. Over 1,000 victims were used in these experiments. Many died and others suffered severe pain and permanent disability.

### Mustard gas experiments

To investigate the most effective treatment of wounds caused by mustard gas. Wounds deliberately inflicted on the victims were infected with mustard gas. Some of the victims died as a result of these experiments and others suffered intense pain and injury.

### Sulfanilamide experiments

To investigate the effectiveness of sulfanilamide. Wounds deliberately inflicted on the victims were infected with bacteria such as streptococcus, gas gangrene and tetanus. Circulation of blood was interrupted by tying off blood vessels at both ends of the wound to create a condition similar to that of a battlefield wound. Infection was aggravated by forcing wood shavings and ground glass into the wounds. The infection was treated with sulfanilamide and other drugs to determine their effectiveness. Many victims died as a result of these experiments and others suffered serious injury and intense agony.

### Spotted fever (typhus) experiments

To investigate the effectiveness of spotted fever and other vaccines. Numerous victims were deliberately infected with spotted fever virus in order to keep the virus alive - over 90% of the victims died as a result.

### Experiments with poison

To investigate the effect of various poisons upon human beings. The poisons were secretly administered to the victims in their food. The victims died as a result of the poison or were killed immediately in order to permit autopsies. [www.auschwitz.dk/doctors](http://www.auschwitz.dk/doctors)

The above experiments were performed on humans by scientists during the Holocaust\*. Should we refuse a treatment that resulted from these tests? If any good had come out of these experiments, would the end justify the means? It is estimated that over 100 million animals suffer every year in laboratory experiments worldwide.

\* The Holocaust was the systematic annihilation of six million Jews by the Nazis during World War 2.



tube) research, including the use of human tissue. Anaesthetics, antibiotics, aspirin, beta-blockers, pacemakers and many other great discoveries owe nothing to animals and everything to human ingenuity, careful studies of patients and brave (or foolhardy!) self-experimentation by pioneering scientists.

Computer modelling along with other technological advances like ct, pet and MRI scanners will

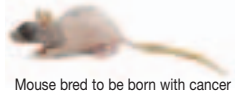
"The history of cancer research has been a history of curing cancer in the mouse.

We have cured mice of cancer for

decades - and it

simply didn't

work in humans."



Mouse bred to be born with cancer

complement the traditional research methods and give us knowledge about human disease that animal models never could and never will.

If animal experiments are so inferior to human-based technologies, why do they persist? There are many reasons, including scientific tradition and conservatism, but chief among them is money.

Animal experimentation is a multi-billion-pound business. Universities, animal breeders, suppliers of cages and equipment, and pharmaceutical companies all profit. Sales of laboratory mice alone amount to £200 million per year. Many doctors and scientists oppose animal testing, but very powerful vested interests ensure its continuation.

The major reason new drugs are still tested on animals is to protect companies in court when people are injured or killed by adverse drug reactions. Pharmaceutical companies admit, in private and sometimes even in public, that animal testing is ineffective but is done because it provides liability protection.

Juries are easy to convince that by conducting multitudinous animal tests of the offending drug, the company did 'due diligence' and had no idea



# big business...continued

that the drug would kill people. Instead of paying millions of pounds in compensation, they get away with paying thousands. Yet as long as drugs are tested on animals, serious side effects in humans are inevitable.

As to finding cures for our most dreaded diseases, it is vital that we abandon animal experiments if we expect to see any progress here. In 1998, Dr Richard Klausner, Director of the US National Cancer Institute (NCI), admitted, "The history of cancer research has been a history of curing cancer in the mouse. We have cured mice of cancer for decades - and it simply didn't work in humans." The NCI believes we have lost cures for cancer because they were ineffective in mice.

For many types of cancer and for diseases like AIDS, prevention is not just better than cure - it is the only cure. Animals cannot help us to identify risk factors or how to prevent disease - such knowledge can only be learned from humans. Twenty years and millions of pounds have been spent on AIDS research in chimpanzees, but the resulting vaccine has failed in people - leaving 8,000 high-risk volunteers in the trial unprotected.

Animals do not suffer from the same diseases as humans, and in order to recreate some of the symptoms for study they have to be physically or chemically damaged. Very often, any treatments developed in the animal are invalid for humans because

the underlying causes of the symptoms are so different. Curing heart failure induced by cutting a dog's aorta will not help to cure heart failure caused by a build-up of cholesterol in human arteries. Yet the UK government recently approved Cambridge University's controversial primate brain laboratory - overturning the conclusion of its own public inquiry that such research is not in the national interest. Monkeys do not suffer from Alzheimer's or Parkinson's - it is in human tissue that we will find the answers to these diseases. Everything we know about them has been learned from studying patients and their tissues, even though brain banks and other vital human-centred facilities are chronically underfunded and under-valued.

Large sums of money spent experimenting on monkey brains will mean less money is available for scientists studying human brains. Worse still, findings from marmoset/macaque monkeys are likely to mislead neuroscientists as they have in the recent past, often with tragic consequences. For example, dozens of treatments for stroke have been developed in primates but all of them have failed in humans and harmed people in clinical trials.

The public has long been sold the idea that cures for human disease will be found via animals. It is time the public knew that this is an expensive and dangerous lie. Until animal experiments - which are "utterly futile" according to Professor Sir Michael Rawlins, chair of the National Institute for Clinical Excellence - are abandoned in favour of state-of-the-art medical research, we will not see cures for the illnesses that plague us, and will continue to suffer the consequences of useless and outdated research.

(1) Huntingdon Life Sciences (HLS) is a contract animal-testing company with facilities in the UK, the US, and Japan. It conducts tests on around 75,000 animals every year, testing pharmaceutical products, agricultural chemicals, industrial chemicals, and foodstuffs on behalf of private clients worldwide. Huntingdon has been under intense pressure since 1999, when a group of British animal rights activists set up Stop Huntingdon Animal Cruelty (SHAC) [www.shac.net](http://www.shac.net), an international campaign to close the company down. The campaign was started after film shot secretly inside Huntingdon, and shown on British television, showed staff punching and laughing at the animals in their care. [www.wikipedia.org](http://www.wikipedia.org)

Dr Ray Greek MD is a physician who is board certified in anesthesiology & subspecialty certified in Pain Management. He was an instructor at two of the US' most prestigious medical schools and has published in the medical literature.

## TeGenero - March 2006

The trial of an anti-inflammatory drug left six men fighting for their lives. The trial was conducted by US giant Parexel on behalf of the German company TeGenero. Tests had previously been carried out on monkeys and rabbits. TeGenero chief scientific officer Thomas Hanke said the drug had caused no deaths in animals. Two other men involved in the trial survived unharmed because they received placebos. They watched in horror as their fellow 'guinea pigs' writhed in agony, wondering whether the excruciating symptoms would strike them. Within minutes...the men's immune systems became super-charged, sending their bodies into overdrive. Because the drug was previously untested on humans doctors had - and still have - no idea how to turn off the response or reverse its effects. from Sunday Herald Sun, 19 March 2006

## The following are some examples of pharmaceutical drugs which had been deemed safe for human use after extensive animal testing, but which were later found to cause serious side effects.



### **Amrinone**

Use of this drug for treating heart failure led to 20% of patients developing thrombocytopenia (lack of blood cells needed for clotting), despite a comprehensive program of animal studies in mice, rats, hamsters, guinea pigs, dogs and rhesus monkeys. Some of these [human] patients died.

### **Birth control pills**

These are known to cause life threatening blood clots in some women, yet scientists have still not been able to reproduce this finding in animals. In fact, dog testing predicted that the pill would decrease the likelihood of clotting.

### **Chloramphenicol**

This antibiotic caused life threatening anaemia in humans. Chloramphenicol is an example of a drug whose effects vary from species to species: dogs do well with it, cats die from it, cows tolerate it but horses do not. It is so toxic to susceptible humans that its use has been outlawed in animals used for food. The tiny amount consumed from ingesting a hamburger made from a treated cow will cause death in such a person unless they receive a bone marrow transplant.

### **Clioquinol**

This anti-diarrhoeal passed tests in rats, cats, dogs and rabbits. It was pulled off the shelves all over the world in 1982 after it was found to cause blindness and paralysis in humans.

### **Diethylstilbestro**

This synthetic oestrogen was designed to prevent miscarriage, but it did just the opposite by

increasing the rate of spontaneous abortions, premature births and neo-natal deaths. No human trials were done; all the safety data was collected from animals.

### **Eraldin**

This heart drug was withdrawn after causing serious side effects in an estimated 7,000 victims, 23 of whom died. It had been tested for six years in mice, rats, dogs and monkeys and when introduced on the market was "particularly notable for the thoroughness with which its toxicity was studied in animals, to the satisfaction of the authorities".(1) Even long after the drug was withdrawn, scientists failed to reproduce these results in animals.

### **Floxin**

This antibiotic progressed through animal testing, only to cause seizures and psychosis when used by humans.

### **Isuprel**

A medication used to treat asthma, it proved devastatingly toxic to humans in the amounts recommended based on animal studies. In Great Britain alone, 3,500 asthmatics died from using the medication.

### **Methysergide**

This treatment for migraine led to severe scarring of the heart, kidneys and blood vessels in the abdomen, although scientists had been unable to reproduce these effects in animals.

### **Opren**

This treatment for rheumatism and arthritis killed 61 people and caused 3,500 adverse reactions. Withdrawn in 1982, the drug had

been tested on monkeys and other animals for nine years with no adverse side effects.

### **Phenylpropanolamine**

This drug, found in many common cold and flu remedies, was banned by the FDA in the US after it was linked to causing between 200 and 500 strokes in young women a year.

### **Suprofen**

This arthritis drug was withdrawn from the market when patients suffered kidney toxicity. Prior to its release, researchers said this about the animal tests: "...excellent safety profile. No cardiac, renal [kidney] or central nervous system [side effects] in any species."

### **Tamoxifen**

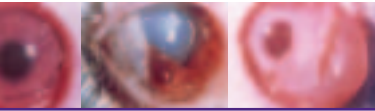
This drug, used to treat and prevent breast cancer in women, caused liver tumours in rats but not in mice or hamsters. The drug has been shown to be harmless to the developing foetus of rabbits and monkeys, but to cause bone abnormalities in rat foetuses. One of the side effects is nausea and vomiting, but this was not predicted in animal studies, even though high doses were tested in dogs - the species considered most predictive of vomiting in humans. The drug has also been implicated in uterine cancer, blood clots, memory loss, absence of periods, and eye damage such as cataracts.

### **Zomax**

This arthritis drug killed 14 people and caused many more to suffer.

(1) Br Med J, 1983, Jan 15

From Sacred Cows and Golden Geese - the Human Cost of Experiments on Animals



# 'Safe' for human use

As well as animal tests allowing unsafe drugs onto the market, the flip side is that human health is also compromised when drugs which may be beneficial to humans are prevented from being released.

Most drugs have side effects, some of which are more acute than others, but many useful medications used to save lives would not have reached clinical trials if they had first been tested on animals. Aspirin, arguably the most successful drug ever, causes birth defects in mice and rats and results in such extensive blood abnormalities in cats that they can only take 20% of the human dosage every third day. Another painkiller, ibuprofen, causes kidney failure in dogs, even at low doses. Other prescription drugs were initially unavailable to people because animal studies predicted side effects not found in humans. They include:

## Corticosteroids

Are used in a variety of conditions, ranging from brain tumors to skin diseases.

They have been shown to cause cancer in some rodents, despite their being used safely by humans for years.

## Depo-Provera

This contraceptive was barred from release in the US in 1973 because it caused cancer in dogs and baboons.

## FK506

This anti-rejection drug was almost shelved before it proceeded to clinical trials. After experimenting on dogs, researchers said animal toxicity

was too severe to proceed to the clinical trial stage.

## Furosemide

Mice, rats and hamsters suffer liver damage from this diuretic, but humans do not.

It is widely prescribed for the treatment of high blood pressure and heart disease.

## Isoniazid

This medication, commonly used for treating tuberculosis, caused cancer in animals.

## Penicillin

The release of penicillin was delayed when its discoverer, Alexander Fleming, put it to one

side because it did not work in rabbits.

This is because rabbits excrete penicillin in their urine. Only when Fleming had a sick human patient and nothing else to try, did he administer penicillin - with excellent results.

## Prilosec

The release of this gastrointestinal medication was delayed for 12 years because of an effect in animals which did not occur in humans.

## Streptomycin

This popular antibiotic caused birth defects such as limb malformations in the offspring of rats.



# Animal 'test systems'



**While animals are choking on chemicals in EPA-mandated tests, the EPA is choking on its own inertia and inaction. In ten years, the EPA has not used its authority...to ban a single toxic industrial chemical.**

by Jessica Sandler

**M**ost Americans, when asked to consider how the US Environmental Protection Agency (EPA) spends their tax dollars, don't typically picture dogs being shoved into metal chambers and forced to eat or inhale pesticides until they go into convulsions. Nor do they imagine rows of rabbits in full-body restraints vainly attempting to save themselves from the industrial solvents that researchers swab into their eyes.

But the sad reality is that this horrific treatment of animals happens routinely at the direction of the EPA. These tests are an enormous waste of lives and dollars. Outdated, unreliable, and cruel animal tests required by the EPA won't protect you or your children from chemicals, and they haven't for a long time. Look at the agency's record. In ten years, the EPA has not used its authority under the Toxic Substances Control Act to ban a single toxic industrial chemical.

The chemical manufacturing industry has long supported the EPA's near-exclusive reliance on animal tests, for a number of reasons. Any required testing means that products are safe from regulation for years while they are tested and re-tested on animals.

Here's how they do it: If a chemical is shown to cause cancer or have other harmful effects during animal testing, industry representatives claim the results aren't applicable to humans.

Saccharin, recently removed from the federal list of cancer-causing chemicals, is an example. In the late 1970s, huge doses of saccharin caused bladder cancer in rats, and the sugar industry had a field day. Now, two decades later, government scientists have been forced to admit that the results of animal tests just aren't applicable to humans.

At the same time, though, company officials happily rattle off the results of EPA-required stud-

ies that indicate their chemicals are not harmful. In these cases, companies laud the predictability of animal studies and claim that their products are safe for humans.

The EPA's addiction to animal testing is so strong that even when evidence from human epidemiological studies implicates a chemical in the spread of a disease, the results are ignored by the EPA for the sake of conducting more and more animal studies. For years, population studies have shown that arsenic in drinking water causes cancer in humans. Yet the EPA dragged its institutional feet for more than 20 years while thousands of animals were killed in tests that attempted to reproduce the effects already seen in humans.

The EPA's callousness toward animals is best revealed in its "Good Laboratory Practices" manual, which refers to living, breathing, feeling beings as "test systems".

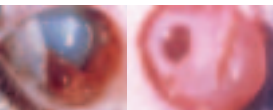
## Test systems

The agency's indifference to animal suffering is vividly demonstrated by the fact that it allocates virtually none of its US\$500 million annual research budget to developing non-animal test methods. Instead, the EPA erects roadblocks at every turn, refusing to use internationally accepted non-animal tests that are more sensitive and less subject to manipulation. It demands that the validity of non-animal tests be rigorously proven through years of practice and refinement even though not a single animal test method has ever been "validated" as to its reliability and relevance to humans much to the detriment of the environment and human health.

Sadly, many EPA officials aren't aware of their own agency's outdated animal testing practices and claim that it hasn't required such tests in years. If its left hand doesn't know what its right hand is doing, how can the EPA possibly protect us?

While animals are choking on chemicals in EPA-mandated tests, the EPA is choking on its own inertia and inaction. In the interest of ethics, good science, and the protection of our children, the EPA must stop poisoning animals.

*Jessica Sandler is a former OSHA health and safety official, is the federal agency liaison for PETA.*



# Animal 'research tools'

## Australia's national statistics. Animals used for 'scientific' purposes 2004

The following table is comprised of the latest available statistics of animal use in research and teaching in Australia. Note that due to inconsistencies between the different states' monitoring systems, the table does not reflect the degree of suffering involved nor does it indicate the type of study, e.g. observational, medical research, agricultural etc. For more detailed information please refer to the reporting body (usually the State Dept for Animal Welfare) in each state. As at the time of posting, Northern Territory and ACT statistics had not been obtained.

Type of animals	Vic	NSW	SA	WA	Qld	Tas	Total
Mouse	299,683		32,190	47,910	113,962	1,073	494,818
Rat	37,652		10,537	9,936	8,513	1,508	68,146
Guinea Pig	10,129		988	405	187		11,709
Rabbit	3,242		622	145	2,421	6	6,436
Other lab animals	230	173,411	303				173,944
Cat	1,103		146	631	652		2,532
Dog	1,739		54	1,757	3,237		6,787
Other domestic	40	1,702		17	129		1,888
Sheep	37,623		199,172	5,169	27,885	3,383	273,232
Cattle	18,849		511	413	56,459	80	76,312
Pig	19,960		861	1,648	8,860		31,329
Horse/donkey	6,304		320	189	934		7,747
Other stock animals	1,220	761,514	59	125	1,128		764,046
Native mammals	5,933	149,986	4,531	11,265	6,980	1,060	179,755
Exotic 'feral animals	400	4,703	1,494	2,093	9,843		18,533
Primates	106	314	38	19			477
Domestic fowl	2,231,258		15,207	800	56,148		2,303,413
Other birds	25,130	308,432	14,484	1,503	27,141	5,450	382,140
Reptiles	1,329	9,748	5,686	7,243	6,453	1,530	31,989
Fish	72,615		43,756	82,126	213,808	35,531	447,836
Amphibians	5,740		830	3,947	16,389	46	26,952
Aquatic animals		1,142,068	190	205	27,901	5,344	1,175,708
Other	5	3141		4	17	109	3,276
Totals	2,780,290	2,555,019	331,979	177,550	589,047	55,120	6,489,005

Sources: [www.aahr.org.au](http://www.aahr.org.au)

Vic. Summary of Statistics of Animal Experimentation, Victoria. Report Number 22. 1 January, 2004 to 31 December, 2004..

NSW Animal Research Review Panel NSW Annual Report 2003/04. NSW figures are more general than for other states as they do not specify between different species.

SA Department for Environment & Heritage - South Australian Government. 1 January 2004 to 31 December 2004.

WA Western Australian animal usage statistics for 2004, Dept. of Local Government and Regional Development, WA.

Qld 2004 Scientific Animal Use Report. 1 January 2004 to 31 December 2004. Dept. of Primary Industries and Fisheries, Queensland Government.

Tas. Animal Research statistics Tasmania Annual Report, Report Number 8: 1 April 2003 to 31 March 2004. Animal Health and Welfare Branch, Dept. of Primary Industries, Water & Environment.

# This won't hurt a bit



swelling, blistering, inflammation,  
blindness, ulcers, agony, death

How would you feel if they did it to you? Stop animal testing.

[www.choosecrueltyfree.org.au](http://www.choosecrueltyfree.org.au)



Animals are often referred to as 'tools' to the researcher and 'products' to the breeders of laboratory animals.

# Animal 'products'

**M**any breeds of animals are used in experimentation including dogs, cats, monkeys, mice, rats, rabbits, sheep and pigs. These animals are often referred to as 'tools' to the researcher and 'products' to the breeders of laboratory animals.



Beagle from Huntingdon Life Sciences. [www.shac.net](http://www.shac.net)

Beagles are preferred chiefly because of their docility (they are easy to handle) and because they have short hair (easy to maintain). The Organisation for Economic Co-operation and Development Guidelines for Testing of Chemicals (1993), which are the standard guidelines for the conduct of toxicity tests recognised by most regulatory authorities, specify that in certain common types of toxicity tests two species of animals should be used - one a rodent (e.g. rats or mice) the other a non-rodent. The preferred non-rodent is a dog and the preferred dog is the beagle.

The BUAV tells us that one animal dies in a laboratory in the US every second, in Japan every two seconds and in the UK every 12 seconds.

In Melbourne, Australia you will find the following 'services', lifted from Monash University's 'Monash Animal Service' webpages (listed below).

## Animal procurement

Monash Animal Services are able to procure most species of laboratory animals on your behalf with ease. We have developed an extensive network of providers to ensure that we can obtain the best level of service and competitive pricing for all of your needs. We presently procure cats, guinea pigs, cane toads and a

range of other species from around Australia and internationally, as required...staff process hundreds of imports every year."

The following text and photos were taken from actual online catalogues of American breeders:

### [www.crpinc.com](http://www.crpinc.com)

...providing purpose-bred research animals and related services to the biomedical research community.

From a one-facility location... CRP has grown to include five locations housing rabbits, guinea pigs, canines, and nonhuman primates.

#### Canines

CRP offers four purpose-bred canine models to meet your protocol needs.

#### Primates

CRP meets the needs of the biomedical research community by providing purpose-bred primates...

### [www.harlan.com](http://www.harlan.com)

A major international company with locations throughout the world is a breeder and supplier of animals. Nine species (beagles, marmosets, rabbits, guinea pigs, rats, mice, gerbils, cats and hamsters) and over 225 stocks and strains of laboratory animals (including hybrid, mutant and transgenic animals) are produced.



#### Domestic Shorthair Cats

A shorthaired, multicolored, disease-free feline which has been bred and socialised for biomedical research



#### New Zealand White Rabbits

Produced in a barrier production facility in an environment specifically designed to maintain and produce pathogen-free rabbits.

## **Chemical toxicity (poisoning) testing on animals basically involves subjecting animals to different levels of potentially toxic substances via different routes of exposure in order to assess how and in which way they are affected.**

**T**his approach to chemical testing, which uses animals and is mainly observational, subjective and descriptive, is extremely crude. Animal tests tell us little about why a substance is toxic, as the results tend to demonstrate effects rather than causes of toxicity. The test results are difficult to extrapolate from laboratory conditions to real life exposure of humans. Their credibility is based on established use rather than proven predictive value. Most standard animal tests were developed decades ago and have either never been validated, or have actually failed retrospective validation (for example, the Draize eye test, the Lethal Dose 50% test and carcinogenicity).

### **Types of tests**

#### **Repeated dose & sub-chronic toxicity**

To assess the toxic effects on the whole body of repeated sub-lethal doses of a chemical (i.e. the dosing is intended to show poisoning effects on internal organs, the nervous system etc. up to but not including death). Forty to 80 rats are usually used per chemical and/or 32 dogs can be used as a second 'non-rodent' species. The animals are repeatedly dosed with a chemical over a period of 28-90 days. This is usually done orally (force-feeding with a syringe or tube) but may also be administered dermally or inhaled. At the end of their ordeal, the animals are killed and their tissues examined pathologically and biochemically. Symptoms can include blood pressure changes, excessive salivation, anaemia, aggression, muscle weakness, hair loss, internal organ damage, pilo-erection (hair standing on end), vomiting (in dogs), tremors, diarrhoea, coma and occasionally death.

#### **Chronic toxicity**

To assess the effects of long-term chemical exposure for significant periods of the animal's life span. As with repeated dose and sub-chronic toxicity, one rodent species (usually 160 rats) and one non-rodent species (usually 32 dogs but can involve primates) will be subjected to exposure via

force feeding, dosing in food, through the skin or via forced inhalation. The length of the study is at least 12 months and as much as two years. Symptoms can include blood pressure changes, loss of appetite, aggression, restlessness, muscle weakness, excessive salivation, internal organ damage, pilo-erection, vomiting (dogs), tremors, bloody diarrhea, coma and death.

#### **Mutagenicity**

To identify any mutagenic effects (genetic mutations) of the chemical either on the rapidly dividing cells of the bone marrow or on the nuclei of blood cells. Usually using 40 rats, mice or hamsters, the test material is administered either orally or by injection into the body cavity.

#### **Developmental toxicity (teratogenicity)**

To assess whether the test substance, when ingested, causes malformations in the embryo. This usually involves at least 80 pregnant rats or 48 pregnant rabbits subjected to a graduated dose or concentration of the test substance during the period of organ formation in the developing embryo. Three dose levels are given where the highest is sufficient to evoke minor changes in the mother (for example loss of weight). Dosing is usually oral and the embryos are killed and examined for gross or more subtle anatomical changes. The mothers endure daily force-feeding by stomach tube throughout pregnancy and may experience poor weight gain, loss of appetite, nasal discharge, pilo-erection, hair loss, diarrhoea, dehydration and occasionally death. The unborn animals can also be damaged by the chemical.

#### **Reproductive toxicity (mammals)**

To identify any effect of a chemical upon the male or female reproductive capacity. Approximately 100 female rats (80 pregnant) and 40 male rats will be used. They are given graduated doses (usually orally) during their reproductive cycles.





Rabbits in restraining devices during tests.

# Toxicity tests

discharge, pilo-erection (hair standing on end), hair loss, diarrhoea, dehydration and vomiting (in dogs). At the end of the experiment all the animals are killed and examined for the accumulation of test substances in target organs.

Assessment is made of post-administration effects on fertility, pregnancy and maternal effects (feeding and nesting behaviour). These animals endure daily force-feeding by stomach tube and can also experience poor weight gain, loss of appetite, nasal discharge, pilo-erection, hair loss, diarrhoea, dehydration and death.

## Carcinogenicity

Used to detect any cancerous changes as a result of exposure to a substance. It uses at least 400 very young rats or mice per substance and involves dosing the animals as soon after weaning as possible and thereafter for the rest of their lives. The animals are usually force-fed the substance but chemicals can also be painted on the skin or delivered by forced inhalation. The symptoms of this slow chemical poisoning include cancerous tumours, lethargy, nausea and death; autopsy will also reveal any tissue or internal organ damage.

## Toxicokinetics

Used to follow the time course of toxic (poisoning) effects and to find out how quickly or easily a substance is absorbed from the gut or through the skin into the bloodstream, how long it is in circulation and how it is metabolised and excreted. Doses are either single or multiple. At least eight healthy young animals are used (can be rodents and dogs) per chemical and dosed orally, via the skin or forced inhalation. For the duration of the test the animals are isolated in small, barren, metal metabolism cages so that their urine and faeces can be collected separately. Some animals also have tubes implanted into their bile ducts. Symptoms include loss of appetite, lethargy, nasal

## Eco-toxicity

Example, acute toxicity in fish. Eco-toxicity tests are conducted to measure a chemical's effects on the environment and wildlife. In fish toxicity, the test chemical is put in the water of large fish-tanks and records are kept of how many fish die as a result of slow poisoning over a number of days.

## LD test

LD stands for Lethal Dose - the dose of a substance that will kill a percentage of the test animals. A single dose of the test substance is usually placed directly into the stomachs of animals via a tube. Different groups of animals are given increasing doses of the test substance to see which dose will kill them. Symptoms of toxic substances include abdominal pain, cramps, convulsions, vomiting (in some species), diarrhoea, paralysis, breathing difficulties and bleeding ulcers. Large numbers of rats and mice are used, but sometimes dogs and rabbits are also included.

## Problems with the LD50 test

Clearly this is a very cruel test. Gerhard Zbinden, one of the world's best known toxicologists, has called it "a ritual mass execution of animals". It gives no information on treating human poisoning. It is an unreliable way of predicting risk to humans because the results are altered by so many factors. Firstly, there are huge species differences. Ten-fold species differences are common. For example, the LD50 for paracetamol was 250-400mg/kg in mice and hamsters. Death was caused by liver damage. However, in rats the LD50 was 1000mg/kg, and there was no sign of liver damage.

## The application of test substances onto the skin or into the eye of an animal.

### Draize eye irritancy test

The traditional method for testing irritation and damage to the eye is the Draize test. The test substance is placed in the eyes of conscious rabbits, who are either held in stocks or have plastic collars around their neck so that they can't rub their eyes with their paws.

Researchers look for signs of redness, swelling, discharge and ulceration to determine how irritating the substance is. The rabbits are killed at the end of the test.

The outer layer of the eye, the cornea, is one of the most sensitive tissues in the body. It is richly supplied with nerve endings, which is why any irritation or damage is extremely painful. Everyone knows how uncomfortable it is to get something like shampoo or onion in the eye. We quickly wash it out. In comparison, the suffering of rabbits is greater, firstly because some of the substances tested are more irritating, and secondly because the rabbits can't wash their eyes.

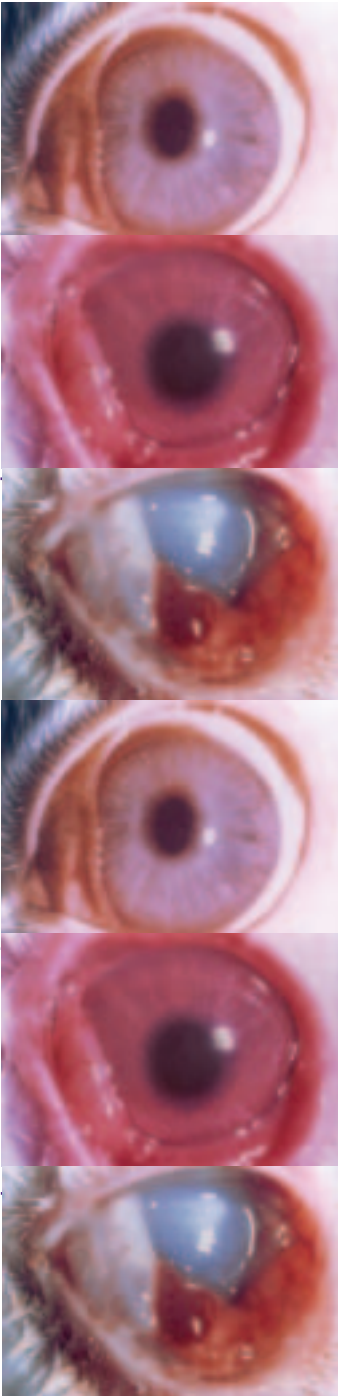
### Skin irritancy test

To test whether a substance irritates the skin, sections of the animals' backs are shaved and sometimes abraded. The substance is applied to the skin and covered with gauze patches.

Researchers then look for signs of redness, inflammation, weeping or scabs to determine how irritating the substance is. An irritating product can make the skin red raw, which is obviously very painful. Rabbits are usually used for this test. At the end of the test they are killed.

### Problems with irritancy tests

The first problem with these tests is that they are very, very cruel. Irritation to the skin and especially the eye can be excruciatingly painful. However, the tests are also inaccurate. In one study the same 12 substances were tested for eye irritancy in 24 well-established



# Skin and eye irritancy tests

laboratories. Since the same substances were being tested, using the same method, and the same species of animal, you would expect scores for the degree of eye injury to be similar. On the contrary, scores varied between rabbits in the same laboratory and varied widely between laboratories. Some substances that were rated as most irritating by some laboratories were rated as least irritating by others.

There are a number of differences between rabbit and human eyes:

- rabbits have a third eyelid
- rabbits produce less tear fluid to wash away irritants
- rabbits have a more alkaline eye (human pH 7.1-7.3, rabbit pH 8.2)
- rabbits have a thinner cornea (human 0.51mm, rabbit 0.37mm).

One study compared the results of animal tests using rabbits and monkeys with information regarding accidental human exposure to products. All animal tests, especially the standard Draize test, overestimated how irritating a

product was to the human eye.

An experienced toxicologist has concluded: "No single animal species has been found to model exactly for the human eye, either in anatomical terms or in response to irritation". There are also considerable differences between human and rabbit skin. When 12 substances were tested on human and rabbit skin, results were similar only for the two most irritating products. The remaining ten products were irritating to the rabbits but not the humans. In another study, a range of household products and industrial chemicals were tested on the skin of rabbits, guinea pigs and humans. Only four of the products were non-irritating in all three species. However, 12 products were more irritating in one or both of the animal species than in humans. A further three products were less irritating in one or both animal species than in humans. The researchers concluded: "Neither the rabbit nor the guinea pig provides an accurate model for human skin. The skin responses of these animals differ in both degree and in kind from those of human skin."



Rabbits subjected to Draize Skin Test



There are many tried and tested ingredients, as well as natural ones, that can be used in the manufacture of cosmetic and household items. However, some companies believe they can get the edge on the market by developing new ingredients and products. Even so, there is no need for animal testing as there are lots of safe and reliable non-animal tests available. Here are a few examples.



# Alternative toxicity tests

In 1989 the Scandinavian Society for Cell Toxicology organised a large international study of alternative methods. This study was called Multicenter Evaluation of In Vitro Cytotoxicity (MEIC), and involved laboratories in many different countries.

A list of 50 chemicals was selected for testing by the Swedish Poison Information Centre.

Chemicals for which there was good human data were chosen. In other words, for these chemicals it was known how much it would take to kill a human from the results of accidents or suicides.

When the MEIC project closed in 1996, 59 laboratories from all over the world had submitted results. There were 29 laboratories that had tested all 50 chemicals. In total, 61 different in vitro (test tube) methods were used.

The researchers compared the lethal doses (LD) taken by humans with the LD50 in animals. They also compared the lethal concentration (LC) in the bloodstream of people who died with the concentration that produced a 50% reduction in the growth of cell cultures (IC50). Results from the final evaluation showed that human cell culture tests were more accurate than animal LD50 tests.

As MEIC director, Dr Bjorn Ekwall, has commented, cell culture systems can still be further improved, but animal tests can't. A project, called EDIT, aims to develop and publish a set of about six in vitro tests that will predict human toxicity with 90% accuracy.

EDIT also aims to develop a set of tests to predict long-term toxicity. Tests are being worked on where repeated doses of a chemical are added to the cell culture for six weeks.

Human cell cultures have several advantages in predicting toxicity because they:

- are human and so avoid species differences
- can be taken from the tissue that a particular

test chemical is most likely to affect, for example the skin, or the liver

- allow researchers to study how a substance causes damage to the cells, that is, why it is toxic
- avoid causing pain and death to animals.

Human tissues for testing are becoming more available in the US and Europe, although less so in Australia.

There are companies that market cell lines from normal tissues and from tumours. For example:

- The American Type Culture Collection has available over 2300 animal and human cell lines.
- Companies such as Clonetics market cell cultures derived from human skin, cardiovascular system, brain, respiratory system, kidneys and muscles (visit the Clonetics website).
- Researchers can collect their own human tissue, for example, blood from volunteers or skin from plastic surgery. For many tissues, though, it is easier to use tissue banks.
- In the US, the National Disease Research Interchange in Philadelphia collects tissues removed during operations and from donors, and distributes them to researchers (visit the NDRI website).
- In the UK, the University of Leicester is doing the same. They use organs that are not suitable for transplantation and would otherwise be destroyed.



**Many different in vitro (test tube) systems have been suggested as alternatives to animal irritancy tests. The following are only a few examples.**

### **Eytex<sup>(TM)</sup>**

This test for eye irritancy uses a vegetable protein extracted from jack beans. Like the cornea of the eye, this clear protein gel becomes cloudy when in contact with an irritating substance. In the Draize test, people have to estimate the degree of damage caused, that is, how swollen or red part of the rabbit's eye is. This system isn't very accurate. In the Eytex test, the degree of cloudiness "damage" can be measured by a machine, a spectrophotometer, which is much more reliable.

### **Reconstructed human epidermis**

This is a multi-layered human skin grown in the laboratory, which can be used to test skin irritancy. It is sold commercially under trade names such as Skin Squared<sup>(TM)</sup> and Episkin<sup>(TM)</sup>.

There are various ways of measuring damage when an irritating product is applied to this test skin. For example, cells can be examined under the microscope, membrane damage can be assessed by leakage of enzymes, or inflammation can be determined by release of interleukins. Whatever method is used, the result can be measured accurately, unlike in animal studies where observers estimate the degree of swelling or redness.

### **Corneal cell lines**

The Statens Seruminstitut Rabbit Cornea (SIRC) is a continuous cell line of rabbit

corneal cells. These are cells that are now grown in the laboratory, and no further rabbits need be killed. When six shampoos were tested on these cells, there was very good agreement with Draize results. The test assessed how much of a substance was needed to kill half the cells. Obviously, the less of a substance that is needed to produce this result, the more damaging it is.

However, to avoid species differences it would obviously be preferable to use human cells. One problem with using cells from human corneas has been that these cells don't live for very long. Now researchers have found a way of not only increasing the number of these cells, but also extending their life span so that they can be studied in more detail. Researchers used human corneas from an eye bank to grow the cells. This cell culture can be used not only to study eye irritation, but also wound healing, parasite infection, and radiation damage in the eye.

### **Neutral red uptake test**

Normal cells in culture readily absorb and hold this neutral red dye. When the cell membrane, or the lysosomes inside the cell are damaged by an irritating chemical, dye will be lost through the leaky membranes. Less dye will remain in the cell. A spectrophotometer is used to accurately measure how much has been lost.

### **Agarose diffusion test**

The problem with cell cultures such as those in the Neutral red uptake test is that the cells are in fluid, so only soluble substances can be tested. In the Agarose diffusion test a small amount of agarose (a seaweed extract) is added to form a gel layer. Some of the test substance is placed on a small piece of filter

# Alternative irritancy test



paper, which is then placed on the agarose. The substance diffuses through the agarose into the cell culture below.

The irritancy of the substance is assessed by measuring the area, in millimetres, of dead cells under the filter paper, that is, cells that have lost their neutral red dye.

## Microphysiometer

An irritating product will produce changes in the functioning of cells. The microphysiometer is an instrument that detects very small changes in cell metabolism by measuring changes in the pH of the cell culture nutrient fluid (changes in lactate, CO<sub>2</sub> production).

## Computer modelling

Expert computer systems can be used to predict the irritancy of new substances on the basis of what is already known about the irritancy of substances with a similar chemical structure. This approach is known as Quantitative Structure-Activity Relationship, or QSAR for short.

The molecular structure of known substances is entered into a computer database. Particular chemical structures are linked to particular kinds of chemical activity, in this case irritancy. When a new substance is entered, the expert system

tries to match its molecular structure to others in the database. If it finds a close similarity, it predicts that the new substance has the same level of irritancy.

## Human studies

Some cosmetics companies already use human volunteers to test new formulations. This is the most reliable test of all. Human irritancy can be assessed through patch testing, where test substances are placed on small areas of the upper back and covered with a patch for two days.

## Testing without animals

In the case of cosmetics, the manufacturer could choose ingredients that have been used for a long time, and so are likely to be safe. If the chemical is a new one, the first test could be the QSAR computer analysis to predict its likely irritancy.

In the next stage, a number of in vitro (test tube) tests could be used. Some tests are better than others for substances of a certain form, for example liquid rather than solid, and for substances of a certain chemical class, for example alcohols rather than oils. The aim would be to choose the best set of tests for a particular substance.

Doing more than one test is not a problem because in vitro tests are so much faster and cheaper than animal tests. For example, an Agarose diffusion test takes 24 hours per product, whereas a Draize test takes at least three days per product and costs ten times more to carry out.

If the product is shown to be safe by this set of tests, it can then be trialed by human volunteers. This is the final and best test of all. By going through this series of steps products can be guaranteed to be safe without the suffering that is currently inflicted on animals.

# What is Choose Cruelty Free?

CCF is an independent, non-profit organisation designed to promote a cruelty-free lifestyle. CCF is totally self-funded by subscriptions, licensee fees, donations and fund-raising activities. All monies raised go toward the production and distribution of CCF literature. CCF:

- Encourages manufacturers and service providers to adopt a cruelty-free ethic.
- Surveys companies which claim to sell products that have not been tested on animals and do not contain cruelly-derived ingredients and accredits (without charging a fee) companies which satisfy CCF that they do not test their products on animals and do not contain cruelly derived ingredients.
- Makes available (by way of a licensing arrangement) an independent, consumer recognised logo which manufacturers can incorporate in their labelling and advertising material to readily identify their companies as cruelty-free.
- Aims to make people aware of their power, as consumers, to change attitudes about testing products on animals.
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For further information:

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