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| The Physiological Link Between Humans and Animals  Animal Testing  The scientific community has proven that animals such as mice, cats, and dogs have a very similar genetic makeup to humans. Animal testing would not be as abundant if the physiological effects were not similar between animals and humans. As we see today, it is so common that the terms �lab rat� and �guinea pig� have strong connotative meanings. Mario Capecchi with the Human Genome Project (linked on [Mr. Thiel�s AP Biology Resource Page](http://205.187.104.8/users/thiele/web/ap.html)) created an [animation](http://www.dnaftb.org/dnaftb/41/animation/animation.html) that estimates mice as having 99% of the same genes as humans (DNA...Human Genome).  The history of animal testing began as the science of toxicology began grow in the 1870s. With this grew the need to discover the biological causes of new chemicals and substances. Animals were then used in pharmacology laboratories to seek a better understanding of different drugs and their dosages. After the First World War, scientists compared the effects of mustard gas in rabbits� eyes to the effects seen in soldiers. After the government passed the Food, Drug and Cosmetic Act of 1938, federal regulatory guidelines were required which involved statisticians and numerous testing procedures. (Fano 11-13)  This link can also be seen in the discoveries and tests with industrial chemicals on animals reported by Discover Magazine�s �[Hormone Hell](http://docs.google.com/hormonehell.html)� article in 1996. Some pesticides and by-products from paper and plastics are recently being recognized as endocrine-disrupting chemicals. These chemicals persist in the food chain because they tend to lodge in the fat of animals on the bottom of the food chain which leads to a higher concentration in the animals at the top. �Beluga whales in the St. Lawrence River have PCB levels so high they must be treated as hazardous waste when they die.� These effects are also showing up in newborns whose mothers have eaten contaminated fish from Lake Michigan and tests show they have neurobehavioral problems. (Dold 58) The extreme problems seen in animals as a result of these harsh chemicals led to the investigation on the effects of humans.  Environmental Hazards to Humans  The Nuclear Accident in Block 4 of the Chernobyl Nuclear Power Station in Ukraine emitted immense amounts of the reactor core into the biosphere when the explosion occurred on April 26, 1986. The Nuclear Energy Agency (NEA) is a specialized agency within the Organisation for Economic Co-operation and Development (OECD), an intergovernmental organization of industrialized countries, based in Paris, France. The NEA created a report on the Chernobyl accident that concluded the radiation exposure to the public could be the major cause in the increase in thyroid cancer. �It was estimated that the incidence of thyroid cancers in children, defined as those diagnosed between the ages of 0 and 14, might increase by about 5 per cent, and in adults by about 0.9 per cent over the next 30 years� (Chernobyl...Impact). This NEA [table](http://www.nea.fr/html/rp/chernobyl/table7.html) shows an incredible increase in childhood thyroid cancer over the years.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | 1981-85 |  | 1986-90 |  | 1991-94 | | Area | No. |  | No. |  | No. | | Belarus | 3 |  | 47 |  | 286 | | Gomel | 1 |  | 21 |  | 143 | | Ukraine | 25 |  | 60 |  | 149 | | Five North Regions | 1 |  | 21 |  | 97 | | Russia, Bryanks &Kaluga | 0 |  | 3 |  | 20 |   (Chernobyl...Impact)  The lichen, a mosslike plant, in country close to Ukraine has absorbed much of the radiation from the Chernobyl disaster. The [reindeer](http://news6.thdo.bbc.co.uk/hi/english/sci/tech/newsid_41000/41770.stm) in Norway and other neighboring countries survive the winter by eating the lichen from old trees and are at risk from the radiation. The Norwegian Radiation Protection Authority now states the people in Lapland are at risk because the people use reindeer as a source of food as well (Reindeer...threat). This is another example of chemicals sustaining in the food chain.  (BBC News)  ([Project Discovery](http://docs.google.com/introduction.html))([California Law](http://docs.google.com/intro2.html))([Physiological Link](http://docs.google.com/intro3.html))([Cancer Clusters](http://docs.google.com/intro4.html))([Environmental Disasters](http://docs.google.com/intro5.html))  [[Home](http://docs.google.com/home.html)][[Introduction](http://docs.google.com/introduction.html)][[Hypothesis](http://docs.google.com/hypothesis.html)][[Procedure](http://docs.google.com/procedure.html)][[Data](http://docs.google.com/data.html)][[Conclusions](http://docs.google.com/conclusions.html)][[Biblio/Links](http://docs.google.com/biblio.html)]  [[2002 Projects](http://docs.google.com/AP2002/index.html)][[2001 Projects](http://docs.google.com/index.html)][[2000 Projects](http://docs.google.com/AP2000/index.html)][[1999 Projects](http://docs.google.com/AP99/index.html)][[1998 Projects](http://docs.google.com/AP98/index.html)] |