

Animal-Free
Science
Advocacy

Animal-Free Science Advocacy Bulletin

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What is the environmental impact of animal research?

There are environmental consequences of both animal and non-animal-based research. However, animal-based research generates additional environmental costs, which is often an overlooked issue when considering the harms of animal research.

The pursuit of human knowledge and scientific advancement will always come with an environmental impact. However, that impact can be significantly reduced by embracing energy efficient and ethically sustainable research methods and processes.



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Chemicals

The safety (toxicity) and efficacy testing of chemical compounds is one of the key reasons why animals are used in experiments. Even when the research is not related to toxicity testing, they are still used for sanitation, disinfection, and sterilisation (1). Some chemicals used for experimentation may have unknown hazardous or carcinogenic properties.

Highly toxic chemicals are also often used to preserve specimens for educational dissections and for veterinary training. Exposure to these substances without appropriate protective equipment can create significant health and environmental hazards. Veterinary schools with high safety standards have failed to meet compliance and may suggest a wider problem with safety surrounding toxic chemicals (2).



Waste

Waste from animal presence and housing includes excrement, bedding, and excess food, in addition to the requirements of the experimentation such as syringes, needles, and gavages (1).

The animals' bodies are considered as waste for disposal purposes and can be associated with hazardous exposure depending on the studies performed on them.

Services transporting the animals and waste outside of the laboratory may be "unaware of what they are handling and the corresponding hazards it may pose" (3) and may not be as cautious of risks associated with the material as the laboratory may be.



Pollution

Waste from laboratories disposed of by incineration may contain 10-25% of substances which are "hazardous to humans or animals and deleterious to the environment" (4). Particulate matter, organic compounds, pathogens, and radioactive materials may be released as part of the incineration process and exposed into the surrounding environment.

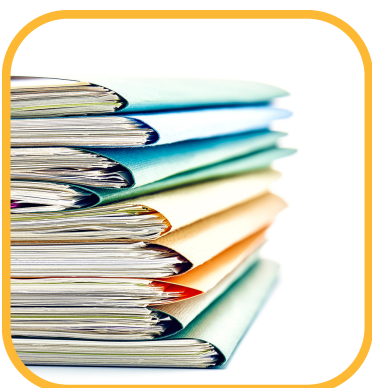
The effectiveness of the incinerator in removing these human health and environmental health risks is reliant upon the facility's management and the facility itself. Accidental spills and mishandling "may release as much or more toxic materials to the environment than the direct emissions." (5)



Resource Consumption

Australia uses approximately one animal in research and teaching for every three people (6). This is compared to one animal for every fourteen people in the United States, and one for every twenty in the United Kingdom.

Under the National Health and Medical Research Council (NHMRC) code (7), “measures should be taken to ensure that the animal’s environment and management are appropriate for the species and the individual animal”. To ensure the comfort and required maintenance of animal environments, research laboratories require significant amounts of energy, up to ten times more per square metre than common office buildings (8). This includes powering ventilation fans, heating, cooling, storage, and transport, in addition to water usage.



Sources

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What you can do

- Become a member to amplify our voices;
- Participate in human-relevant research by contributing to human population medical research studies.
- Become a monthly donor so we can continue to ask for funding of alternatives to animal in medical research;
- Share this bulletin, or the full environmental impact page:





Animal-Free Research

Many animal-free methods of research use sophisticated computer software which requires climate-controlled environments, data processing facilities, and bio secure storage for tissue samples and cell cultures.





However, the considerable reduction, elimination, or multiple-use applications of samples without waste (eg. toxicology testing using a lung-on-a-chip instead of an LD50 test on a mouse), along with a reduction or elimination of transportation, breeding, housing, and physical observation will significantly reduce the energy requirements for research laboratories.

Additionally, 'green' toxicology research methods such as organs-on-a-chip and artificial intelligence consider the life of the research and product or ingredient being studied "across entire supply chains through smarter designs and policies". (9)






Animals can impact the environment in ways which a computer simulation or tissue sample cannot. Non-animal methods of research cannot escape and spread disease or breed, they do not have lives or deaths which require maintenance or disposal, and they can be endlessly modified without the ethical and ecological impacts of genetic breeding or wild capture.

Using digital, virtual, or synthetic models of dissection while adding education about the ecological impact of human interaction with animals during a crucial developmental stage of young adults may reduce the levels of speciesism amongst those transitioning from school- to working-age and encourage cognitive consideration of the impact of individual choices on animals and the environment.

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