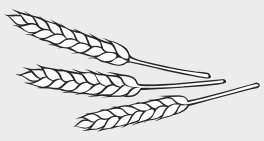
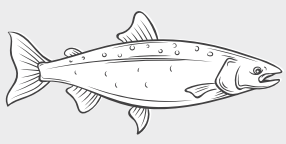
FOOD SAFETY RESEARCH AND TOXICITY TESTING

TOXIC ELEMENTS IN FOOD SUPPLY

As ARSENIC
Cd CADMIUM
Hg MERCURY
Pb LEAD


Rice and Cereals

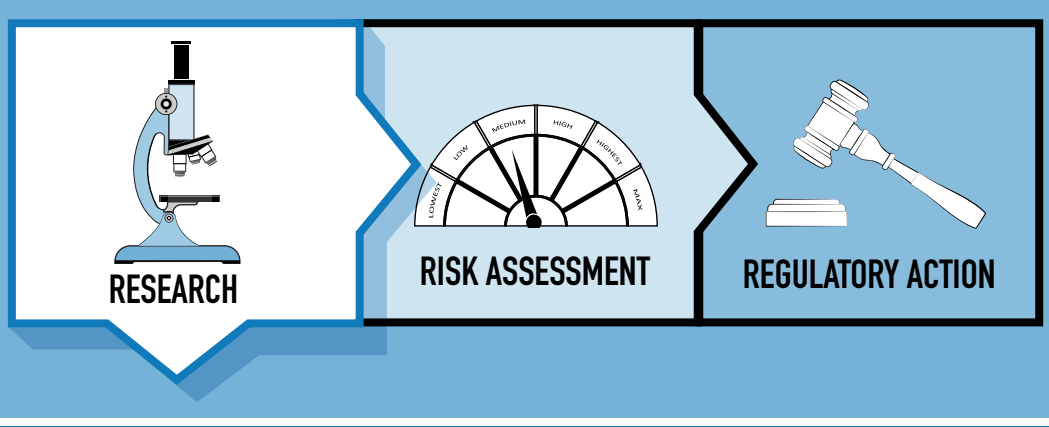

Grains


Fish


Shellfish


Leafy Vegetables

FDA monitors, tests, and sets standards for metals in foods. When the level of metals is determined to be unsafe, FDA takes action.

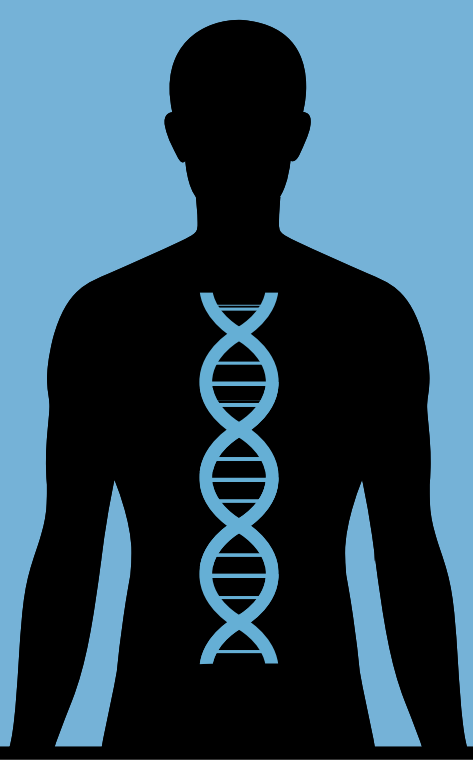


TOXICITY TESTING IN ANIMALS

MOUSE

- Life cycle ~50-60 days
- Experiments can take over a year
- More lab space needed to house mice
- Higher cost to feed and maintain mammals

GENETIC SIMILARITIES TO HUMANS

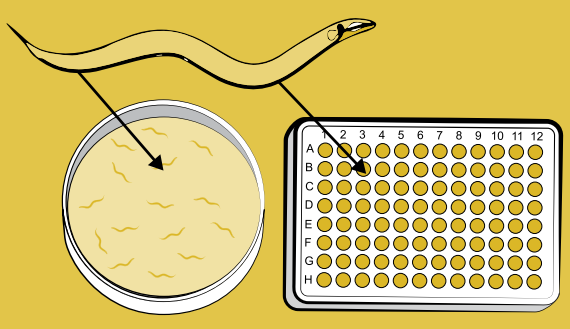


C. ELEGANS WORM

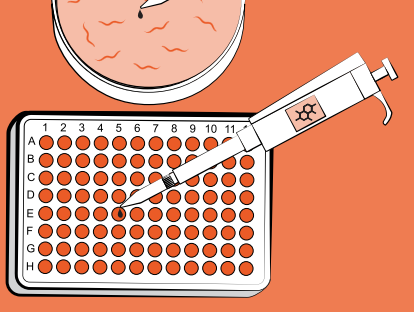
- Life cycle ~ 3 days
- Experiments take less than a week
- Less lab space for microscopic worms
- Much lower lab costs
- Easy to breed in large numbers
- Transparent skin allows easy observation of cell activity
- No ethical constraints

C. ELEGANS TESTING PROCESS

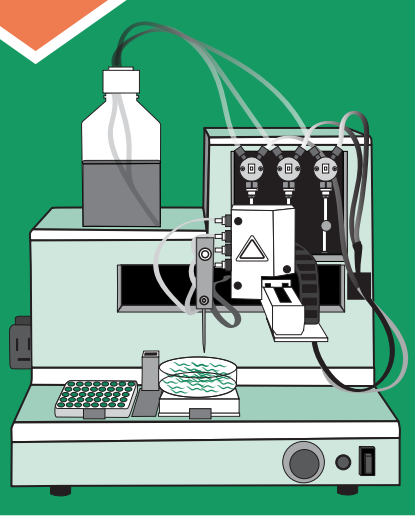
1. Worms are grown and tested in multi-well plates.



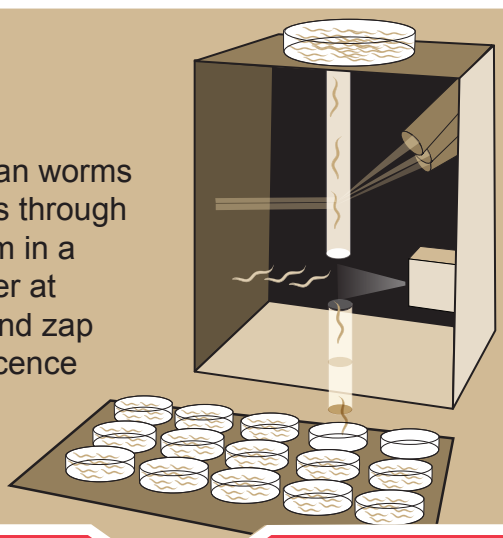
2. Expose *C. elegans* worms to a mixture of chemicals.



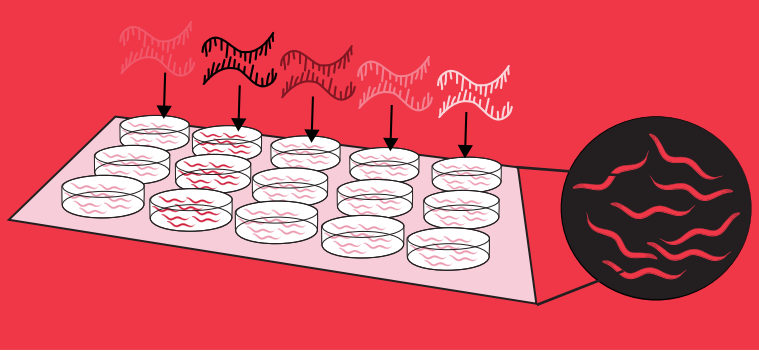
3. Place worms into flow cytometer machine for screening.



4. Optically scan worms as they pass through a laser beam in a flow chamber at high rates and zap with fluorescence emissions.



5. Sort and dispense worms as they exit based on optical properties defined by the scientist.



6. Analyze toxicity data output from thousands of worms per chemical.