

Joint IUPAC and WHO Project on Training of School Children “Basic Science”

**Dr Nida Besbelli
WHO Regional Office for Europe**



Training school children - Basic Science Environmental Health - Toxicology

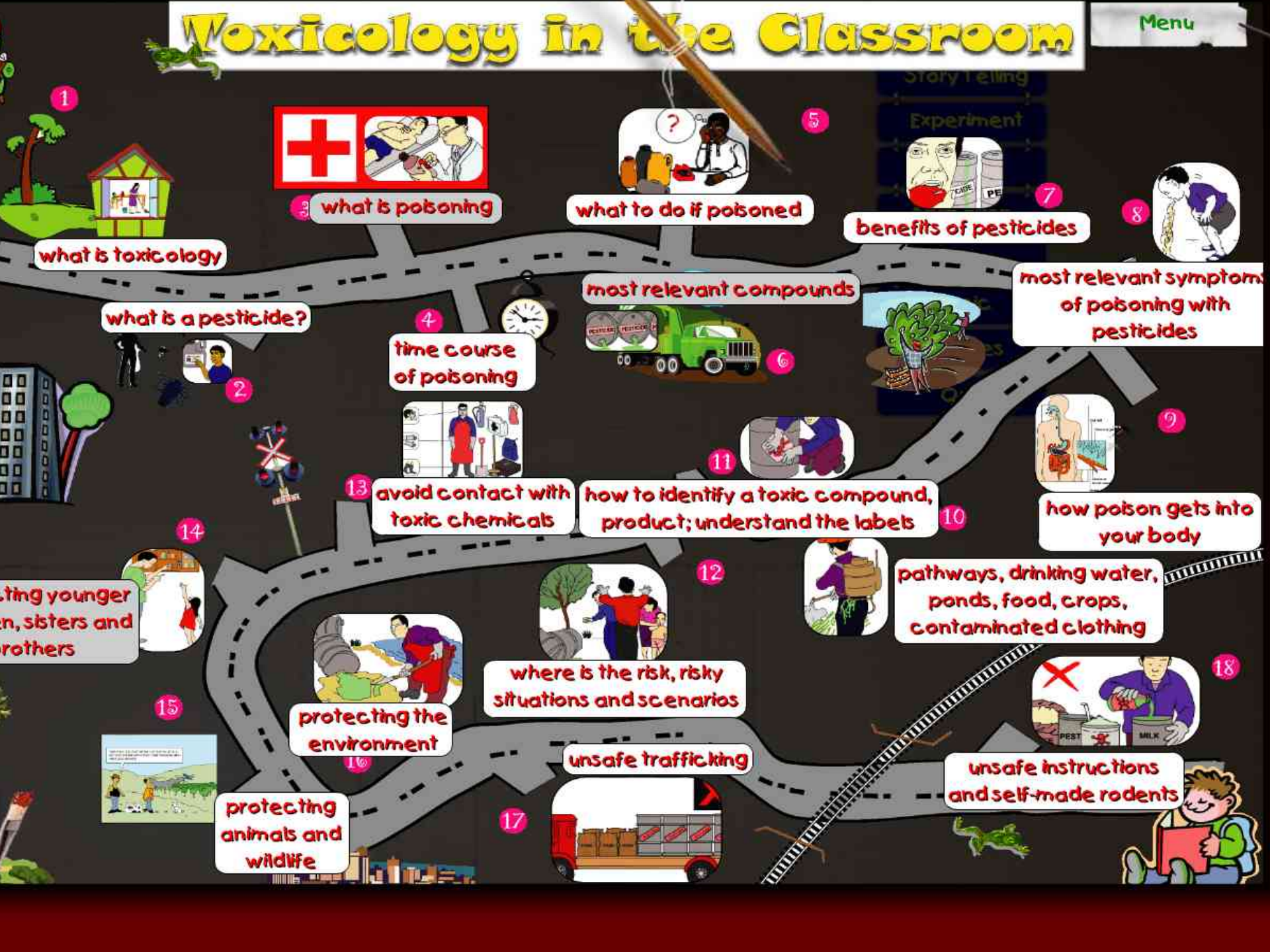
Aim

- to educate children about protecting themselves from the harmful effects of pesticides and hazardous chemicals, and
- to develop a safety culture for the future.

Content

- General facts about chemistry,
- Risk assessment,
- POPs (persistent organic pollutants),
- Pesticides,
- Safe handling,
- Preventing contamination,
- Protecting oneself and others, the environment from harmful effects, and
- How can chemicals, especially pesticides can affect human health and the environment.

Toxicology in the Classroom



3.3 what is poisoning



5 what to do if poisoned



7 benefits of pesticides



8

most relevant symptoms of poisoning with pesticides

most relevant compounds



6



what is a pesticide?

4 time course of poisoning



13 avoid contact with toxic chemicals

10 how to identify a toxic compound, product; understand the labels



11



9

how poison gets into your body

pathways, drinking water, ponds, food, crops, contaminated clothing



12

where is the risk, risky situations and scenarios



14 protecting the environment

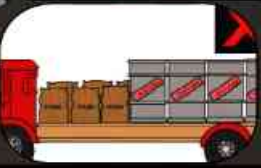
protecting younger children, sisters and brothers

15

protecting animals and wildlife



unsafe trafficking



17

unsafe instructions and self-made rodents



18



Training school children - Pesticides and health

The material is targeted to 9-13 years olds, because this age group is in transition from guarded childhood to more independence and might be at higher risk

Children in this age group are often responsible for looking after their sisters and brothers and they influence the behaviour of younger children

The project is not intended to train the students in safe handling or use but to educate them about the risks and necessary precautions associated with pesticides and other hazardous compounds.

Sound Management of Pesticides and Diagnosis and Treatment of Pesticide Poisoning - A Resource Tool

enter



WHO



UNEP



NATIONAL POISON CENTER
OF MALAYSIA



CONTENT

Preface

Acknowledgements

Part I : Overview

Part II : Modules

Module 1

Module 2

Module 3

Module 4

Module 5

Module 6

Module 7

Module 8

Module 9

Module 10

Annex I:

Glossary

Annex II:

Other sources of information

Annex III:

Image archive

Module 1: General

Subject A: General considerations on pesticides

No. 1 Use of pesticides	B
No. 2 Pesticide name according to target species	I
No. 3 Pesticide action on target species	I
No. 4 Systemic pesticide	I
No. 5 Technical product, active ingredient, formulation	I
No. 6 Household pesticide	B
No. 7 Toxicity	I
No. 8 Hazard and risk	I

Subject B: Classification and labelling

No. 1 Hazard classes	I
No. 2 Classification of formulation by hazard	I
No. 3 Importance of label	B
No. 4 Content of label	I/A

Subject C: Regulatory control of pesticides

No. 1 Registration of pesticides	B
No. 2 Code of conduct	I
No. 3 Access to pesticides	I

Subject D: International conventions

No. 1 Rotterdam Convention	A
No. 2 Stockholm Convention	A
No. 3 Basel Convention	A

Educational Objectives





CONTENT

Preface

Acknowledgements

Part I : Overview

Part II : Modules

Module 1

Module 2

Module 3

Module 4

Module 5

Module 6

Module 7

Module 8

Module 9

Module 10

Annex I:

Glossary

Annex II:

**Other sources of
information**

Annex III:

Image archive

Annex 2 - Other Sources of Information



Preventing Health Risks From The Use Of Pesticides In Agriculture.



Instructions For Treatment And Use Of Insecticide-treated Mosquito Nets.



International Code of Conduct on the Distribution and Use of Pesticides.



The WHO Recommended Classification of Pesticides by Hazard



Pesticide Training Tool Kit
A Guide for Community Workers



Management of Poisoning-
A Handbook for Health Care Workers- Chapters 5 and 7



PowerPoint Templates



Links to other sites



CONTENT

- Preface
- Acknowledgements
- Part I : Overview
- Part II : Modules
 - Module 1
 - Module 2
 - Module 3
 - Module 4
 - Module 5
 - Module 6
 - Module 7
 - Module 8
 - Module 9
 - Module 10
- Annex I: Glossary
- Annex II: Other sources of information
- Annex III: Image archive

Annex 2 - Other Sources of Information

Links to other sites

- A- WHO
- B- ILO
- C- UNEP
- D- FAO
- E- UNIDO
- F- UNITAR
- G- OECD
- H- UNECE
- Other Sources

A. World Health Organization WHO

- International Programme on Chemical Safety (IPCS)
Environmental Health Criteria
<http://www.who.int/ipcs/publications/ehc/en/index.html> (accessed 17 November 2005)

- Health and Safety Guides
<http://www.who.int/ipcs/publications/hsg/en/index.html> (accessed 17 November 2005)

- International Chemical Safety Cards
<http://www.who.int/ipcs/publications/icsc/en/index.html> (accessed 17 November 2005)

- WHO recommended classification of pesticides by hazard and guidelines to classification 2004
http://www.who.int/ipcs/publications/pesticides_hazard/en/ (accessed 17 November 2005)

- Joint WHO/FAO meeting documents on pesticide residues (JMPR)
<http://www.who.int/ipcs/publications/jmpr/en/index.html> (accessed 17 November 2005)

BASIC SCIENCE

ENVIRONMENTAL HEALTH

TOXICOLOGY IN THE CLASSROOM

Enter

CONTENT

EXPERIMENT

GAMES

INTRODUCTION

ANIMATION

**STORY
TELLING**

**TEACHER'S
NOTES**

LINKS

GLOSSARY

EVALUATION

INTRODUCTION

EXPERIMENT

STORY
TELLING

GAMES

GLOSSARY

ANIMATION

LINKS

TEACHER'S
NOTES

EVA

CONTENT

BASIC SCIENCE ENVIRONMENTAL HEALTH TOXICOLOGY IN THE CLASSROOM

1. What is toxicology
2. What is a pesticide
3. What is poisoning
4. Time course of poisoning
5. What to do if poisoned
6. Most relevant compounds
7. Use of pesticides
8. Most relevant symptoms of poisoning with pesticides
9. How poison gets into your body
10. How can you get exposed to pesticides
11. How to identify a toxic compound, product; understand the labels
12. Where is the risk, risky situations and scenarios
13. Avoid contact with toxic chemicals
14. Protecting younger children, sisters and brothers
15. Protecting animals and wildlife
16. Protecting the environment



Quit



Print Page

INTRODUCTION

EXPERIMENT

STORY
TELLING

GAMEs

GLOSSARY

ANIMATION

LINKS

TEACHER'S
NOTES

EVALUATION

CONTENT

Introduction

Basic Science: Environmental Health Toxicology Course

Course Goals:

- 1.to educate children on protecting themselves from the harmful effects of pesticides and hazardous chemicals;
- 2.to develop a safety culture for the future.

Course Objectives:

1. The course will provides a foundation of knowledge about pesticide use and safety in developing countries; thus basic introduction to Basic Science Environmental Health discipline. Educating young people about pesticides and POPs and concerns for protection from exposures is important world-wide. Main focuses are on pesticide modes of action, safe handling, and personal protection, primarily, with a minor focus on when and where they are appropriate (careless use).
2. Attentions are also given on emphasizing a range of options to raise awareness on how to avoid exposures (use of protective equipment, better personal hygiene, etc.) and the potential dangers, to themselves, their families and the environments by not doing so.
3. This instructional courseware is targeted to the whole family members - parents and adolescent children - all of whom may be involved in the farming operations. Since the parents are responsible for both their children and for the misuse of pesticides and they need to be made aware of the consequences. In addition, as workers involved in pesticide use they will be an important target in that respect.
4. A specific plan for promoting and distribution of the material should be made

Knowledge and skills

- The training materials included general facts about chemistry, risk assessment, POPs, pesticides, safe handling, preventing contamination, protecting themselves and others and the environment from harmful effects, and how chemical especially POPs and pesticides could affect human health and the environment.
- The toxicology course is planned to be integrated in the field of "Basic science" in the discipline of "Environmental Health".

Instructional/Training materials

- The instructional materials prepared were in the form of interactive multimedia instructional courseware.
- The course is the first of a series "Toxicology in the classroom" for use in schools within the basic Science Environmental Health discipline.

1. What is toxicology
2. What is a pesticide
3. What is poisoning
4. Time course of poisoning
5. What to do if poisoned
6. Most relevant compounds
7. Use of pesticides
8. Most relevant symptoms of poisoning with pesticides
9. How poison gets into your body
10. How can you get exposed to pesticides
11. How to identify a toxic compound, product; understand the labels
12. Where is the risk, risky situations and scenarios
13. Avoid contact with toxic chemicals
14. Protecting younger children, sisters and brothers
15. Protecting animals and wildlife
16. Protecting the environment

CONTENT

1. What is toxicology
2. What is a pesticide
3. What is poisoning
4. Time course of poisoning
5. What to do if poisoned
6. Most relevant compounds
7. Use of pesticides
8. Most relevant symptoms of poisoning with pesticides
9. How poison gets into your body
10. How can you get exposed to pesticides
11. How to identify a toxic compound, product; understand the labels
12. Where is the risk, risky situations and scenarios
13. Avoid contact with toxic chemicals
14. Protecting younger children, sisters and brothers
15. Protecting animals and wildlife
16. Protecting the environment

Learning Outcomes**What is pest?****Examples of Pest****What is Pesticide?****The Content of Pesticide?****How To Handle The Pesticide?****Types of Pesticides****Quiz**

CONTENT

2. WHAT IS A PESTICIDE?

LEARNING OUTCOMES

Student is able to:

- state the meaning of pesticide.
- state at least three (3) examples of pesticide.
- describe briefly types/classes of pesticide and their usefulness.
- describe in general the ways to handle pesticides.
- explorations:
 - Compare pest and disease vectors in the home and in the farm/garden



1. What is toxicology
2. What is a pesticide
3. What is poisoning
4. Time course of poisoning
5. What to do if poisoned
6. Most relevant compounds
7. Use of pesticides
8. Most relevant symptoms of poisoning with pesticides
9. How poison gets into your body
10. How can you get exposed to pesticides
11. How to identify a toxic compound, product; understand the labels
12. Where is the risk, risky situations and scenarios
13. Avoid contact with toxic chemicals
14. Protecting younger children, sisters and brothers
15. Protecting animals and wildlife
16. Protecting the environment

INTRODUCTION

EXPERIMENT

STORY
TELLING

GAMES

GLOSSARY

ANIMATION

LINKS

TEACHER'S
NOTES

EVALUATION

CONTENT

What is a Pesticide

Examples of Pest

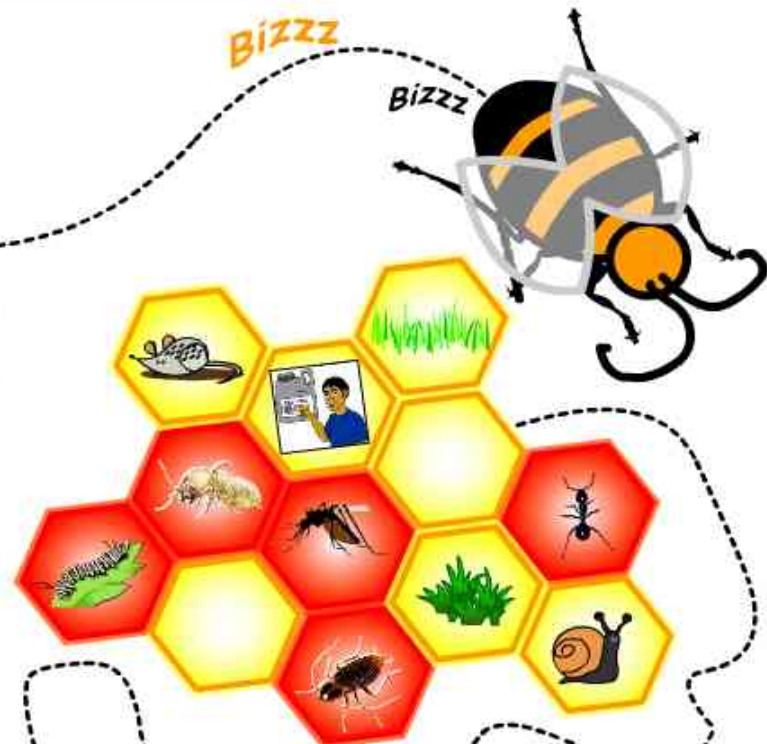
1. What is toxicology
2. What is a pesticide
3. What is poisoning
4. Time course of poisoning
5. What to do if poisoned
6. Most relevant compounds
7. Use of pesticides
8. Most relevant symptoms of poisoning with pesticides
9. How poison gets into your body
10. How can you get exposed to pesticides
11. How to identify a toxic compound, product; understand the labels
12. Where is the risk, risky situations and scenarios
13. Avoid contact with toxic chemicals
14. Protecting younger children, sisters and brothers
15. Protecting animals and wildlife
16. Protecting the environment

(Click on the words)

INSECTS

WEEDS

RODENT



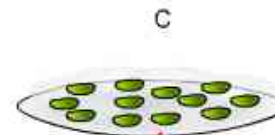
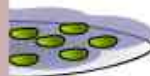
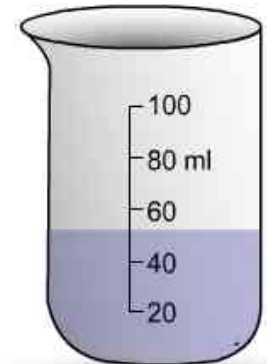
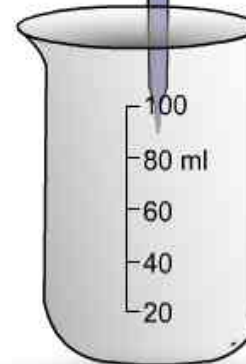
Introduction Experiment Aim Method

Hypothesis Variables Conclusion

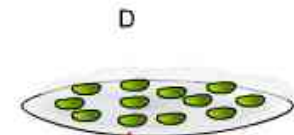
AIM

to study the effects of increasing amount or concentration of toxic chemicals on seeds.

Repeat similar step in no.1 for all the solutions prepared earlier. Now you should have seven Petri dishes filled with different concentration of solutions and each of the containers contains 12 seeds.



Petri Dish



Petri Dish



Experiment 1

Experiment 2

Result

|| pause

▶ play

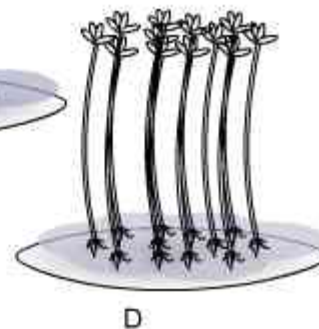
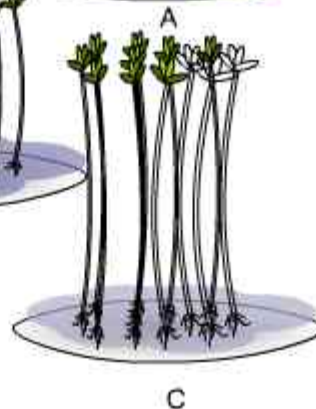
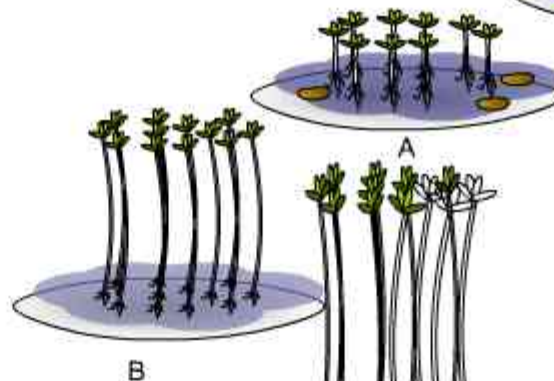
Result: Count the number of seeds that grow and died. Fill the results in Table 1.

Table 1

Label	Number of seed that grow	Number of seed that died
Control Solution		
Parent Solution		
A		
B		
C		
D		
E		



Indicators



Result

Control Solution	
Parent Solution	
A	
B	
C	
D	
E	

56
second



Dragon Fly

Cat

Dog

Snail

Mosquito

Earth Worm

Caterpillar

Mice

Ant

Beetle

Lady Bird

Bee



Words

Toxicology

Toxicity

Toxicity hazard

Factors influencing effects

Dose

Degree of toxicity

Route of exposure

Exposure

Acute toxicity

Chronic toxicity

Poison

Meaning of "toxic"

Paracelsus

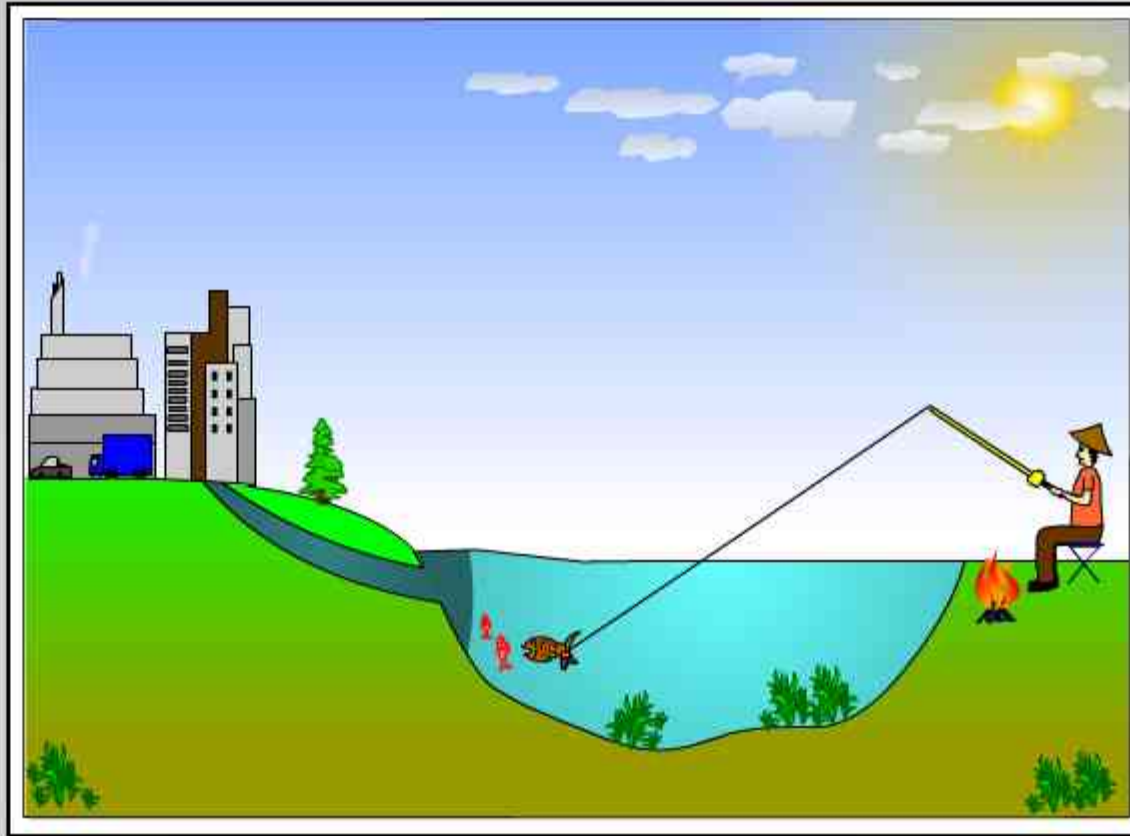
Doses

Duration of exposure

Definition

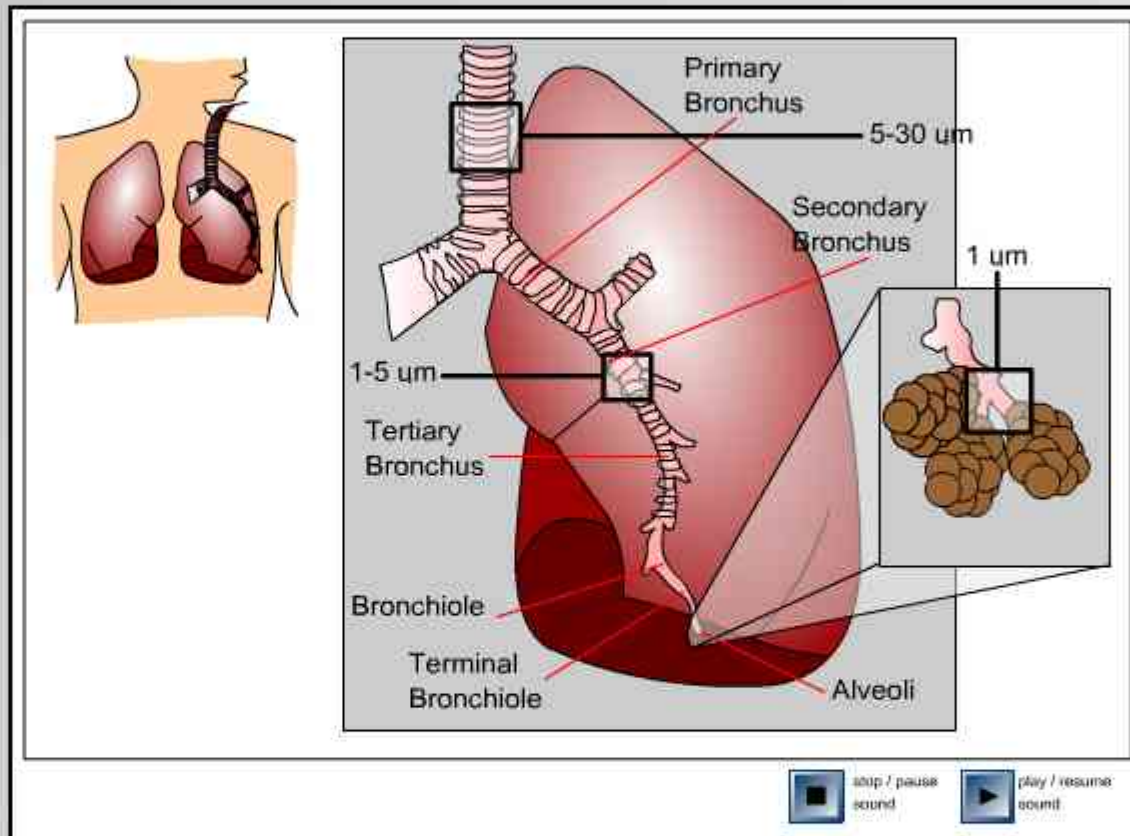
Acute toxicity is characterised by rapid absorption of the substance when the exposure is sudden and severe.

Normally, a single large exposure is involved. Examples of toxic chemicals that cause this include carbon monoxide and cyanide.



Acid Rain Bioaccumulate Heart Kidney Mucociliary Clearance
Natural Condition Nervous System Nervous System Neuron
Ozone Depletion Particle Size Respiratory System

(spacebar) to close the animation



Acid Rain Bioaccumulate Heart Kidney Mucociliary Clearance
 Natural Condition Nervous System Nervous System Neuron
 Ozone Depletion Particle Size Respiratory System

(cebar) to close the animation

Fighting
Pest with
the 3 P's
(pdf)

Plan for
pesticides
Safety: Care
for your plants,
family and pets
(pdf)

What's a
weed?
(pdf)

Encyclopedia
of Earth.mht

An Introduction
To The Health
Effects of
Pesticides
(Powerpoint)

Insects:
What is
Pest? (pdf)

Pets have
enemy
too (pdf)

LINKS



Training school children-Pesticides and health

Thank you

