

## "THE ATOM, RADIATION AND RADIOACTIVITY"

A PNRI Multimedia Presentation on CD-ROM

**IT** is a part of our daily lives. It comes from many sources in our surroundings. It gives tremendous benefits to man if properly used. It can be measured and controlled. These are just some facts about ionizing radiation that most people are not aware of. The fragmented information on radiation available to the public are more often focused on the negative aspects. The PNRI has developed this multimedia presentation, especially designed for students and teachers, in order to give a comprehensive and factual knowledge of radiation. Each topic pertaining to radiation — from the atom, radioactivity, radiation safety to the beneficial uses of radiation in food and agriculture, medicine, the environment and in industry — is discussed in text and graphics (mostly animated).



### About PNRI

The Philippine Nuclear Research Institute (PNRI) has been the center of nuclear science and technology activities in the country since 1958. The PNRI is mandated to develop and regulate the safe and peaceful uses of nuclear science and technology in the Philippines.

"The Atom, Radiation and Radioactivity" is produced by the

Department of Science and Technology (DOST)  
**Philippine Nuclear Research Institute**

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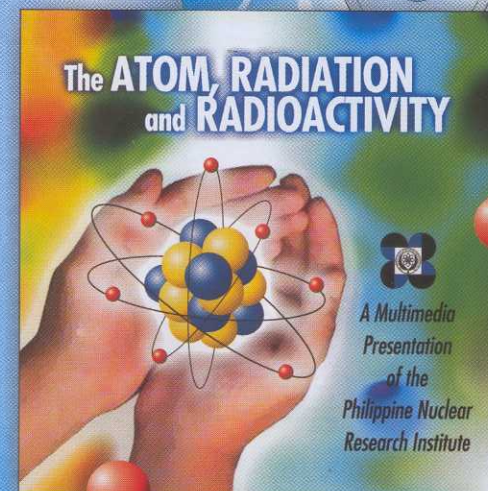
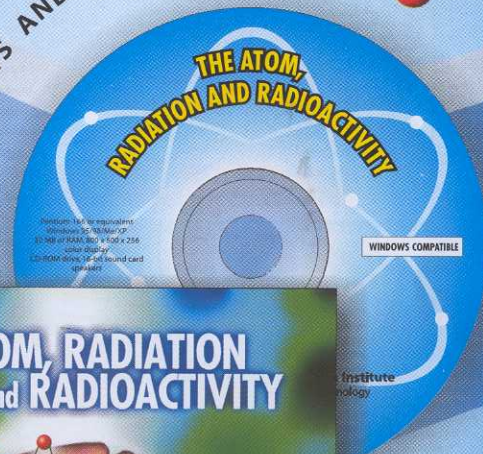
The CD is available at the:

Information Services  
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Fax: (632) 920-1646  
Website: [www.pnri.dost.gov.ph](http://www.pnri.dost.gov.ph)

Learn about  
**nuclear science**  
the **easy way**

the **atom** on CD-ROM

A LEARNING RESOURCE MATERIAL  
FOR STUDENTS AND TEACHERS!



# Find all these features in the CD!

*"Nothing in the history of mankind has opened our eyes to the possibilities of science as has the development of atomic power. In the last 200 years, none has given us so unbelievable, as what man has done...with the atom, there seem to be almost no limits to what may be achieved: inexhaustible energy, new worlds, ever-widening knowledge of the physical universe."*  
- Isaac Asimov

**elektron**  
848 B.C. In ancient Greece, Thales discovered static electricity by rubbing an amber stone ("elektron" in Greek) with cloth.

**atomos 1 A.D.**  
400 B.C. Democritus proposed that all substances could be subdivided until an indivisible "atomos" was reached.  
350 B.C. Aristotle thought that all matter was classified into combinations of 4 "elements": earth, water, air and fire.  
17th Century The French philosopher Rene Descartes and his followers developed a mechanical view of matter in which the size, shape, and motion of minute particles explained all observed phenomena.

1686 Otto von Guericke of Germany invented the vacuum pump.  
1687 Isaac Newton formulated his laws of motion and also developed the spectrum analysis of visible light.  
1687 Robert Boyle of Ireland proposed that matter is composed of elements which could be found by chemical analysis.

1727 Discovery of Brownian Motion  
Newton's Law of Motion



View photos on the applications of nuclear technology

Browse a timeline of nuclear science developments

PERIODIC TABLE OF THE ELEMENTS

1	2											18	19	20				
H	He																	Ne
Li	Be	B	C	N	O	F	Ne	Na	Mg	Al	Si	P	S	Cl	Ar	Kr		
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
Cs	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Xe	
Fr	Ra	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	Xe	

Alkali metals  
Alkaline earth metals  
Transition metals  
Lanthanide series  
Actinide series  
Other metals  
Metalloids  
Non-metals  
Noble gases

Look up the different elements using a digital periodic table

The ATOM, RADIATION and RADIOACTIVITY  
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Welcome to the world of the atom!  
Choose a topic:

- the atom and radioisotopes
- radiation and radioactivity
- radiation safety
- radioactive waste management
- beneficial uses of radioisotopes

MILESTONES IN NUCLEAR ENERGY DEVELOPMENT IN THE PHILIPPINES

**The Seventies**

1970-1971 First locally designed, fabricated and assembled prototype nuclear equipment which consisted of National Orthopedic Hospital and to Rural Provincial Hospital for use in blood volume determination studies.

1971 First leak detector in underground pipeline of the Philippine Manufacturing Company using PULC-enclosed radioactive sodium (Na-22).

1972 President signed the Treaty of Non-Proliferation of Nuclear Weapons (NPT) December 1972.

Presidential approval of the feasibility study of the LUPRA and IAEA for the establishment of the first nuclear power plant.

Radionuclide production of some 30 radiopharmaceuticals and related compounds

mutant rice varieties (atomic rice or PANIC-2 and Mutagenesis developed)

50% 60% 70% 80% 90%

Know about the milestones of nuclear science and technology in the Philippines

MULTIMEDIA LIST

- Animations
  - Matter, Molecules and Atoms
  - Structure of an Atom
  - Examples of Compounds
  - Understanding the Atom: An Evolution
  - Atomic Notation
  - Periodic Table
  - Isotopes of Neon
  - Isotopes of Hydrogen
  - Half Life

Browse animations, pictures, and illustrations using the multimedia list

GLOSSARY  
Units and Terms to Remember

**Alpha particle**  
A positively charged particle emitted by certain radioactive materials. It is made up of two neutrons and two protons bound together, hence is identical with the nucleus of a helium atom. It is the least penetrating of the three common types of radiation (alpha, beta, gamma) emitted by radioactive material. Alpha particles can be stopped by a sheet of paper. It is not dangerous to man unless the alpha-emitting substance has entered the body.

accelerator  
alpha-emitter  
alpha-particle  
atoms  
atomic bomb  
atomic energy

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Use the glossary to get acquainted with terms on nuclear science and technology

The Penetrating Power of Radiation

Human Arm Aluminum Lead Concrete

Learn about the atom and radiation through colorful animations

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PHILIPPINE NUCLEAR RESEARCH INSTITUTE  
About PNRI

The Philippine Nuclear Research Institute (PNRI) is the sole agency of the government mandated to develop and regulate the safe and peaceful uses of nuclear science and technology in the Philippines. It is formerly called the Philippine Atomic Energy Commission which was created in 1958. The PNRI is one of the research institutes under the Department of Science and Technology (DOST).

Get to know the Philippine Nuclear Research Institute