RADIO-HEALTH CHEMISTRY TO BE A PHARMACIST’S TERRITORY

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Introduction

A pharmacist is a profession to be authorized to deal with radio-pharmaceuticals by the Pharmacy Law. Today, the new 6-years course has started. Radio-health chemistry is included to teach the principle, knowledge, and technical skills of radioisotopes. Our concern is whether or not we will have a merit to study radio-health chemistry as a pharmacist is a currently serious issue.

The purpose of the present survey is to encourage pharmacy students to learn more radio-health chemistry, monitor possible risks to public health caused by radiation, counsel people’s concern about safety and raise more support to safer utilization of radioisotopes.

The model core curriculum of pharmacy education (October, 2005)

The items related with radio-health chemistry are excerpted from the curriculum

Physical Pharmacy	C1(1) -4	Radiochemistry and Radiation
Analytical techniques	C2(3)-2	X ray, CT scan, PET etc.
Environments and Human Health	C12(1)-5	Ionizing radiation and its influence on living things
	C12(1)-6	Non-ionizing radiation and its influence on living things
Pharmacy in Society	C18(1)-4	Radiopharmaceuticals

Questionnaire to pharmacy students

Question #1

Have you learned that a pharmacist is authorized to be a professional for handling the radiopharmaceuticals and related issues by the Pharmacy Law and the Japanese Pharmacopoeia ?

Answers	Rate(%)
1. No	79
2. Yes	21

This question was asked to provide information whether or not pharmacy students know their roles in medical society.

Questionnaire to pharmacy students

Question #2

Suppose you are informed that one of the nuclear power plants near your home town had an accident and radioactive materials were leaked out, who can help you decide whether or not you should evacuate?

Answers	Rate(%)
1. Physicians in hospital	49
2. Environment safety control division of government	24
3. Research institutes of university and/or companies	7
4. Pharmacy	6
5 .Fireengine and/or police stations	3

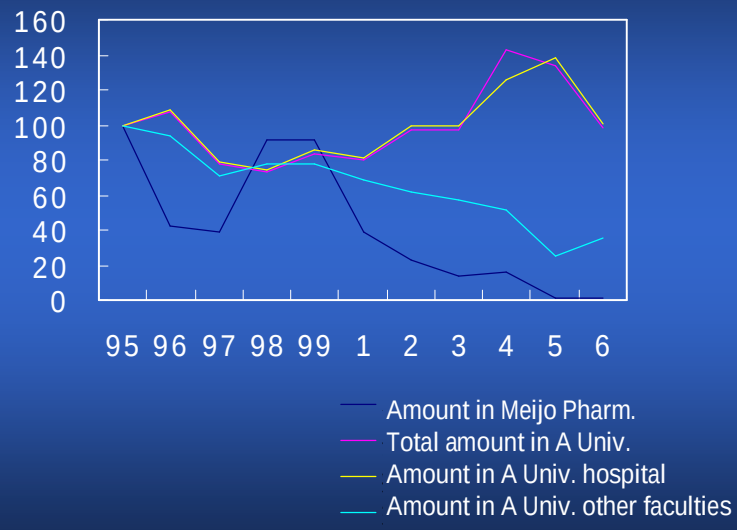
Modules covered in schools

Module		Covering level
C1(1)-4	Radioactivity and radiation	3
C2(3)-2	Analytical techniques	> 2, 1
C12(1)-5	Ionized radiation on biology	> 2
C12(1)-6	Non-ionized radiation on biology	< 2
C18(1)-4	Radiopharmaceuticals	< 2

Where the covering level is an average number obtained from 23 institutions.
Rate of covering level : 3 ; 100%, 2 ; 50%, 1 ; poor

by S. Kojima in 2007

RI consumption



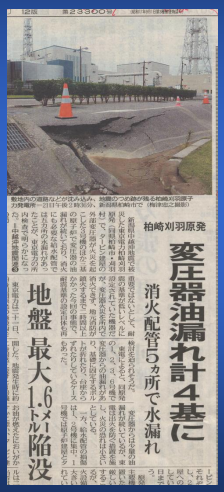
Reported numbers of PET cameras

Types	2005	2006
PET/CT	49	85
PET	89	83

In 86 Institutions
Isotope News 2008

Nuclear Power Plant Damaged by Earthquake

July, 2007 Kashiwazaki Japan



柏崎刈羽原発

変圧器油漏れ計4基に

消火配管5カ所で水漏れ

地盤 最大1.6メートル陥没

Discussion and Summary

A pharmacist is authorized to handle radio-pharmaceuticals in Japan.

Radio-health chemistry education has been introduced in pharmacy schools, but insufficient education is given to pharmacy students.

The consumption of radioactive materials has been reduced in education and research, while the medical use of radio-pharmaceuticals and diagnosis instruments has been increased rapidly.

It is urgent that the public health should be kept from unnecessary exposure to hazardous radiation in daily life.

As a authorized profession, pharmacists well armed with basic knowledge regarding the mechanisms of radiation, the characteristics of radiation, handling techniques, and the merits and demerits of the radiation use are required to protect and educate people in public.

For the future, pharmacists should continue to occupy radio-health chemistry as one of their major territories.

The author’s group is ready to achieve its roles of education regarding radio-health chemistry in Meijo University.

Article reporting more RI usage in newer medical instruments

明日の医療

医療機器

PETで全身のがん発見

全国各地で導入進む

Diagnoses by FDG-PET

Diseases	2005	2006
Brain tumor	863	1,183
Lymphoma	962	1,161
Colon cancer	911	1,103
Breast cancer	799	992
Pancreatic cancer	334	414
Hepatic cancer	429	311
Melanoma	96	122

In 86 institutions
Isotope News 2008

Article reporting RI-contaminated filler soil used in residential areas

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