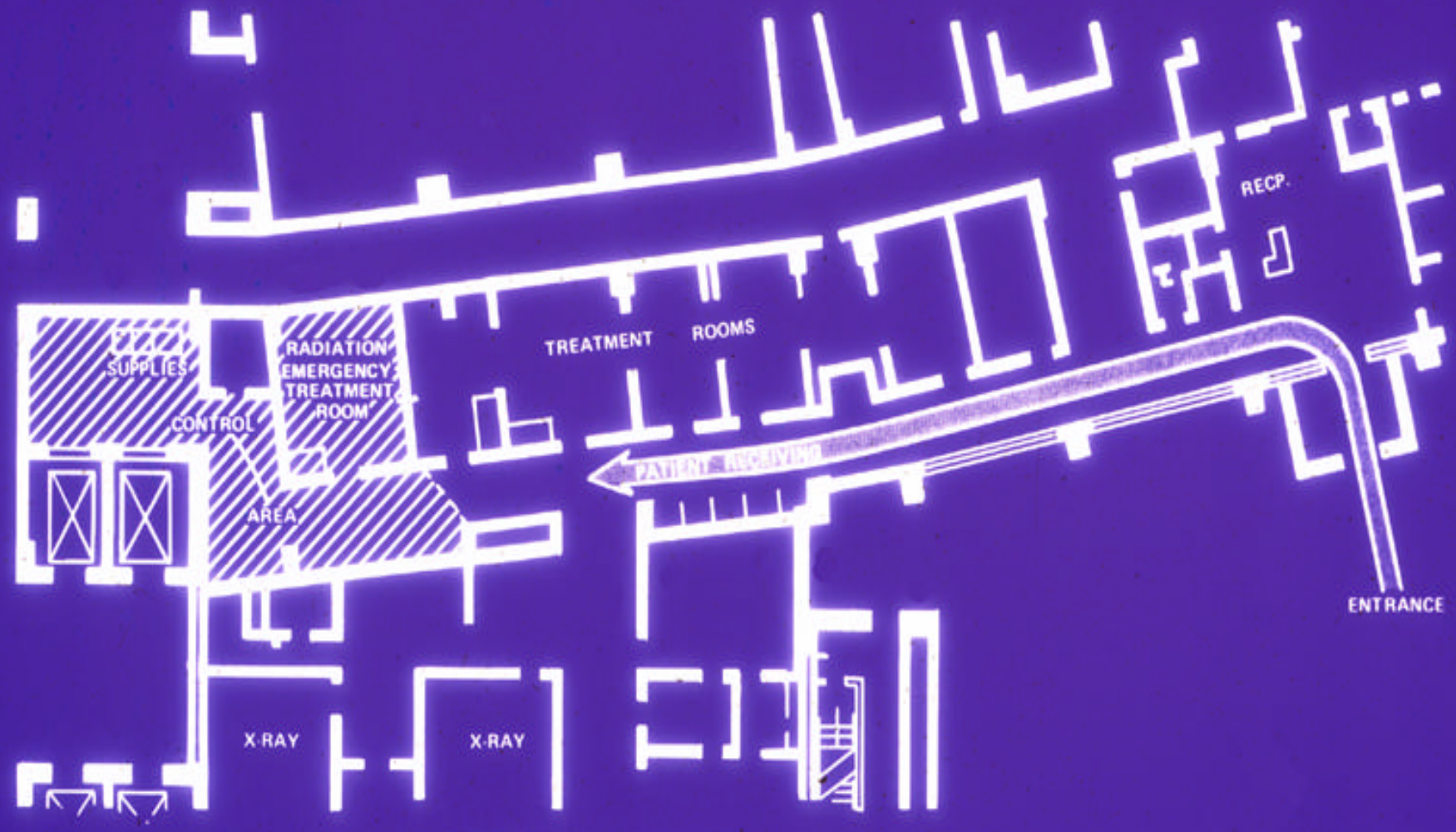
ARE OUR HOSPITALS PREPARED FOR CHEMICAL/BIOLOGICAL/NUCLEAR TERRORISM?
USE OF KI IN THYROID BLOCKING

By

Ken Miller



EMERGENCY CARE UNIT

RADIATION EMERGENCY AREA

CAUTION
RADIATION
AREA
CAUTION
RADIATION
AREA
CAUTION
RADIOACTIVE
MATERIALS

Normal Saline 0.9%
STERI-PAD
Gauze
Pads
sterile
Johnson & Johnson
pre-op.
FLEXIBLE ENEMA
ADMINISTRATION
UNIT
cotton tipped
applicators

Kimwipes
Hi-Count
cotton tipped applicators
alcohol prep
Dennison
Gummed Labels

REMOVE

No. 18,874

The Evening News

HARRISBURG, PA., THURSDAY, MARCH 29, 1979

FINAL

PRICE FIFTEEN CENTS

Radiation seeps from N-plant

Levels still considered safe

By MARY O. BRADLEY
Staff Writer

Metropolitan Edison Co. has been "successful" in getting the flooded Unit 2 reactor at Three Mile Island Nuclear Generating Station cooled down, although low-level radiation continues to be emitted from an auxiliary building, Walter M. Creitz, Met Ed president, said today.

There was no indication how long the radiation would continue to be discharged through the building's ventilation system.

The radiation is coming from contaminated water which flowed into the auxiliary building when a drain tank inside the reactor building overflowed Wednesday just after a cooling water pump failed and shut down the reactor.

Creitz told a mid-morning news conference the cooldown was occurring at a "more rapid rate" today than after the shutdown. The additional radiation being emitted off the island "is a very low level," Creitz said.

Air samples taken from helicopters detected radioactive iodine and xenon up to 16 miles away from TMI Wednesday, but officials say the levels are considered safe and pose no hazard to people.

John G. Herbein, Met Ed vice president of generation, estimated radiation levels of 5 to 7 millirems have been found "two or three miles from the site." The normal safe dosage of radiation per year per individual is 200 millirems, Herbein said.

Herbein said it is only "speculation" that human error may have contributed to the accident. He said this was possible, but it could not be determined until a complete report is prepared.

Jan Strasma, spokesman for the Nuclear Regulatory Commission regional office in King of Prussia, also told The Evening News such assertions were purely speculative.

U.S. Sen. Gary Hart, who chairs a subcommittee on nuclear regulation, said in a morning television broadcast he had been told by NRC investigators that human error may have been involved.

"We can't say there was no human error, nor can we say there was," Strasma said. "We will thoroughly vacuum that question during our investigation," question during our investigation." Herbein confirmed that the Unit 2 has been shut down 3 or 4 times three times during its primary startup.

Herbein said "there has been some fuel failure." He said there was a possibility that one-half of one percent of the slender control rods containing uranium "may have been breached," releasing radioactive contaments into the primary coolant water.

He said the "accident certainly was not something exceptional or out of the ordinary realm."

In response to a question about the existence of any safety defects at TMI, Herbein said there are none "to the best of my knowledge."

Cleanup crews from Met Ed worked around the clock to mop up contaminated water in the auxiliary building. No one is being permitted inside the reactor building because of high level of radiation, according to Strasma.

"This is one of the more serious reactor accidents to happen in the history of commercial power operation," Strasma said.

George Trofter, another Met Ed official, said this morning the "reactor has cooled to 285 degrees Fahrenheit, and the pressure is reduced to 500 pounds per square inch. This is considered normal, good and safe."

Trofter said one reactor coolant pump is running normally and steam is being dumped into the main condenser to continue the cool-down.

"The only leakage into the atmosphere at present is a vapor from

See RADIATION—Page 2

Related stories and photos on Pages 6 and 7.

Radiation warning 'left gaps'

By DON SARVEY
Staff Writer

Metropolitan Edison Co. revised two years ago before the U.S. Nuclear Regulatory Commission that in the event of an emergency at the Unit 2 nuclear reactor on Three Mile Island, it would be able to determine "within minutes" the potential radiation exposure to off-site areas.

"It is possible to assess very quickly the potential off-site dose consequences of an accident," the company asserted at the time. "These initial off-site radiation dose projections can be made within minutes."

The company also testified that state authorities would be informed within five minutes were a major accident to occur at the plant.

Worker wearing protective suit and holding
Three Mile Island for the Wednesday

Prepared

Valve

Failu

The Evening News

No. 16,875 HARRISBURG, PA., FRIDAY, MARCH 30, 1979 FINAL PRICE FIFTEEN CENTS

Pregnant women, pre-schoolers evacuated from N-plant's vicinity

N-leak causes panic

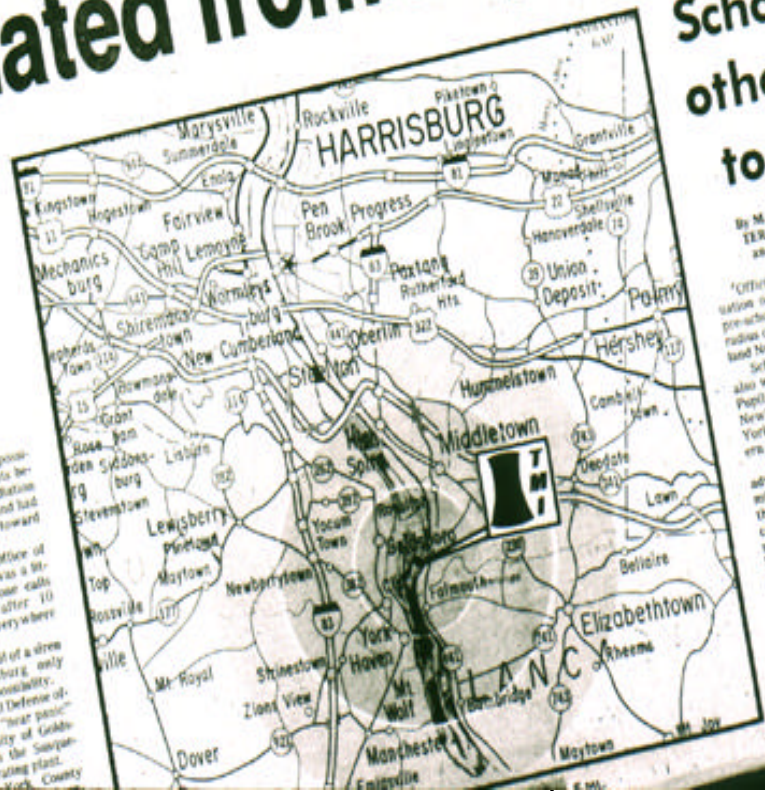
By CAL TURNER and JERRY GLEASON
Staff Writers

Conflicting reports about possible evacuation of area residents because of the increased radiation flow at Three Mile Island Island had parts of the area verging toward panic at mid-morning.

The Dauphin County Office of Emergency Preparedness was a virtual hive of activity. Phone calls rolled in and shortly after 10 switchboards almost everywhere were jammed.

The unauthorized wail of a siren in Downtown Harrisburg only served to heighten the possibility.

A York County Civil Defense official said there was a "near panic" in the small community of Goldsboro which is across the Susquehanna from the generating plant. York County



Schools are closed, others are warned to stay in homes

By MARY O. BRADLEY, TERRY WILLIAMSON and JOHN SCOTZIN
Staff Writers

Officials today ordered the evacuation of all pregnant women and pre-school children from a five-mile radius of the crippled Three Mile Island Nuclear Generating Station.

Schools within the same radius also were ordered to be evacuated. Pupils from the Fishing Creek and Newberry Elementary schools in York County were taken to Northern York High School.

Gov. Dick Thornburgh today advised all people living within 10 miles of TMI to stay indoors until they receive further instructions because of an "uncontrolled release of radiation" but these limits by noon had been reduced to a five-mile radius.

Shortly after 11 a.m. Thornburgh was in contact by telephone with President Jimmy Carter briefing him about the emergency here.

Less than an hour earlier, Thornburgh was faced with a momentous decision on the possible evacuation of more than 950,000 residents from four counties.

Emergency officials in Dauphin, York, Lancaster and Cumberland

a.m. that the evacuations would not be carried out.

In addition to staying indoors, authorities said, residents should close their windows and turn off air conditioners.

Dauphin County Office of Emergency Preparedness said afternoon kindergarten classes in county schools were advised not to convene. Morning kindergarten classes were dismissed at noon, as usual.

Harrisburg schools dismissed students at noon.

Dauphin County employees living within a 10-mile area of Harrisburg were allowed to go home and "told to stay inside".

In the event of evacuation, Dauphin County officials said persons should carry blankets, pillows, medicines and a prescription for glasses, and before leaving their homes should turn down thermostats.

State employees were given no instructions to quit early, but several offices were reported to have closed for the day.

Traffic in the vicinity of TMI was restricted to emergency vehicles and police elsewhere were being called out to handle traffic chores.

ABBOTT
HOSPITAL
SERVICES
FIRE

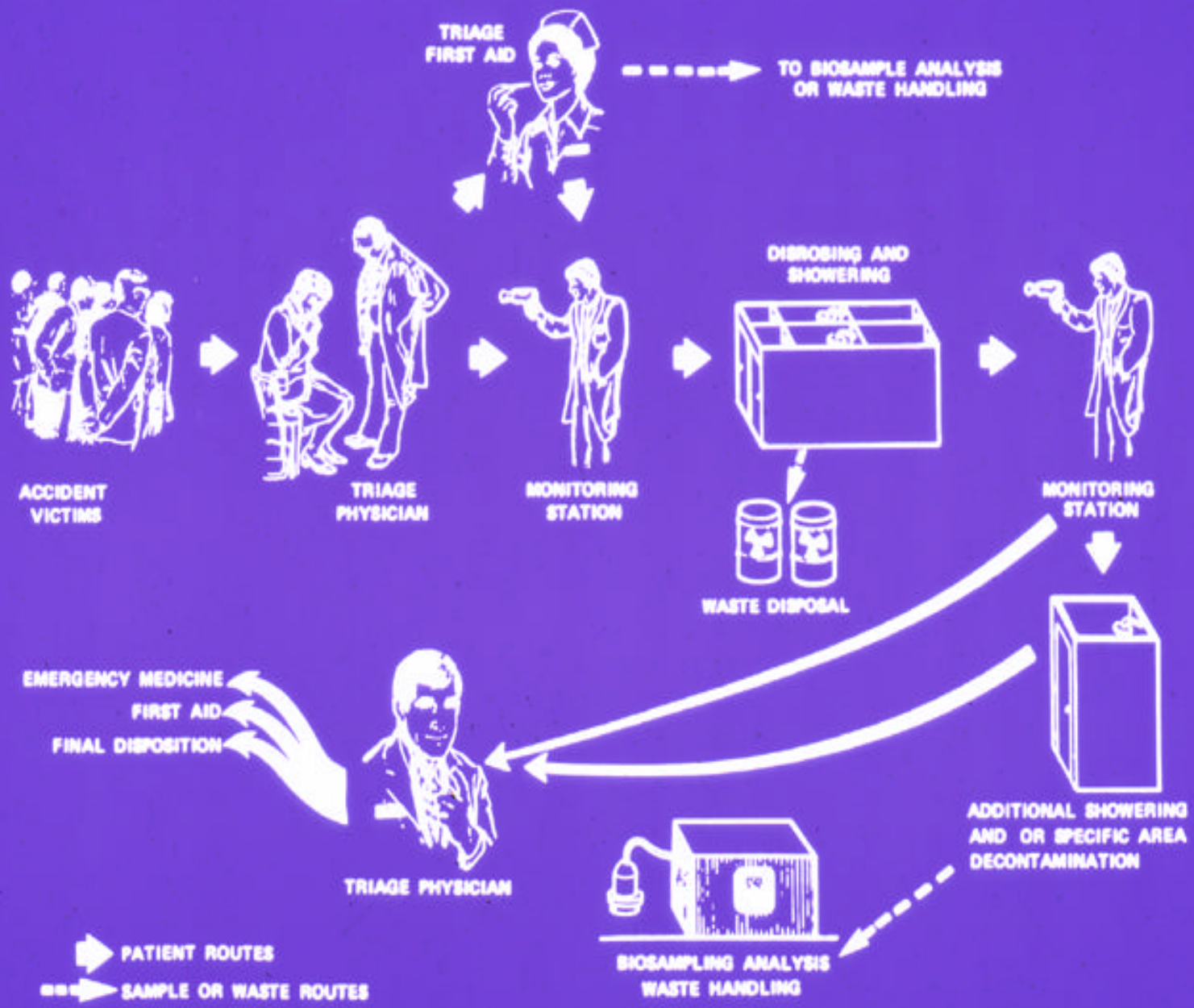


Fig. 4. Diagram illustrating the expansion of a medical radiation emergency plan. The basic steps are triage, monitoring, showering and decontamination, biosampling, analysis, and waste handling.

Conclusions

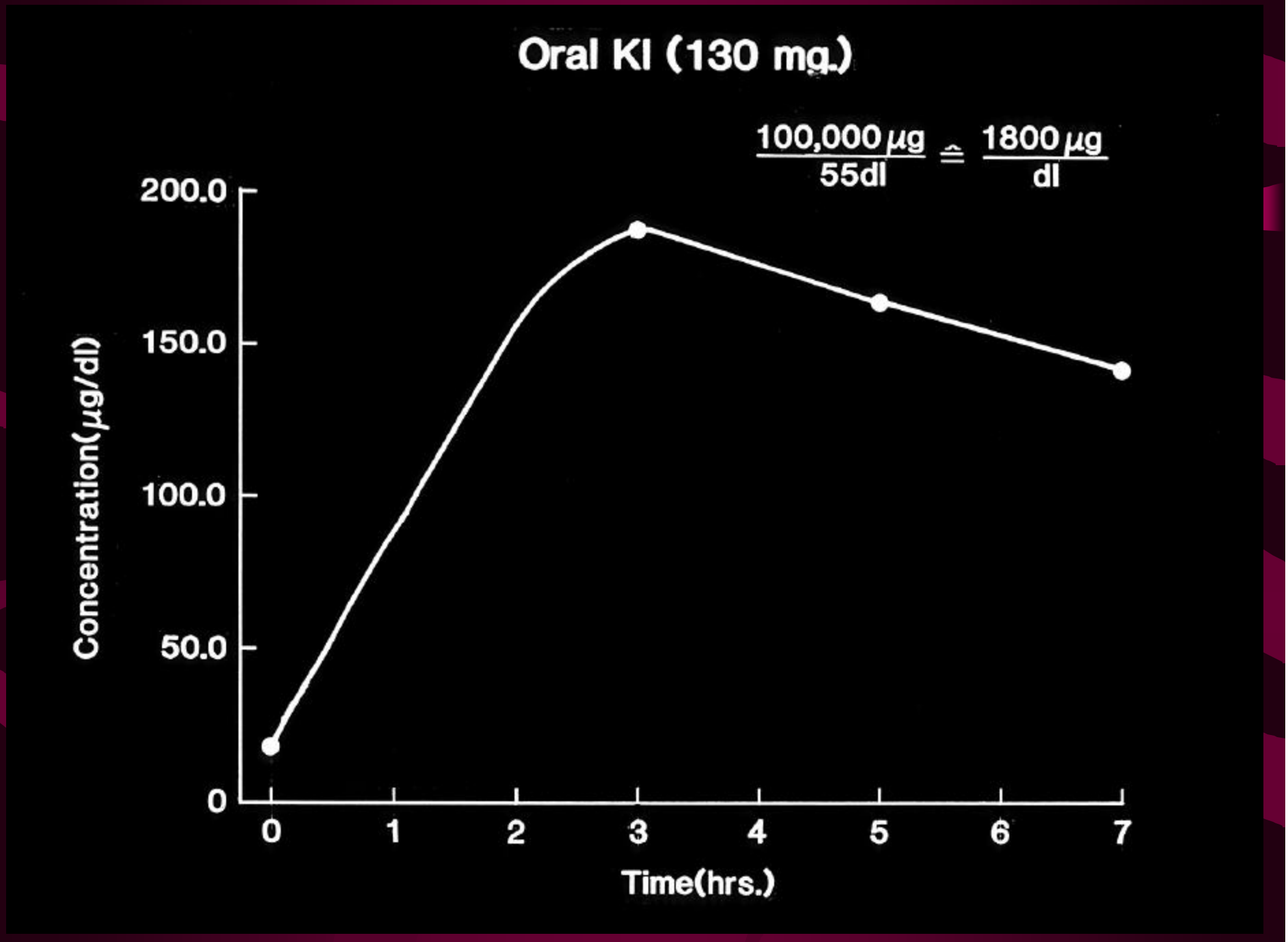
- We did not have the supplies and capabilities of dealing with large numbers of contaminated patients.
- Other arrangements had to be made.
- Our ED air handling system needed to be modified.

History of Radioiodine

- 1937- John Livingood and Glenn Seaborg discovered iodine-131 and cobalt-60.
- 1946- Seidlin, Marinelli and Oshry treated a patient with thyroid cancer with iodine-131, an “atomic cocktail.”
- 1950- Human serum albumin (RISA) labeled with iodine-131 for imaging the blood pool within the heart.

Imaging with I-131

- Brain- Iodinated (I-131) human serum albumin (RISA)
- Cerebrospinal fluid- RISA
- Heart (Blood Pool)- RISA
- Kidney- I-131 iodohippurate
- Liver- I-131 Rose bengal
- Lung- I-131 MAA
- Placenta- RISA


Oral KI (130 mg.)
100,000 µg / 55dl ≙ 1800 µg / dl
200.0
150.0
100.0
50.0
0
Concentration(µg/dl)
0
1
2
3
4
5
6
7
Time(hrs.)

THYROID BLOCKING

130 mg KI

KI W/IN 1 HR BLOCKS 90% OF I-131 UPTAKE

KI W/IN 6 HRS BLOCKS 50% OF I-131 UPTAKE

Detecting little iodine-131 leakage, state officials ruled out immediate distribution of the potassium iodide stored here in a warehouse near the crippled reactor.

Rat Paw Dip

96% blockage at 48 hours.

K.MILLER
©1999

Dogs

6 ml povidone I solution on nape of neck 2 hrs. before I-131(oral capsule) resulted in 87% blockage (thyroid uptake counts) at 24 hrs. with blocking lasting beyond 72 hrs.

Humans

- 4 ml of 2% tincture of I on forearm results in avg. serum level of 13.8 uG/dL at 2 hr. (10 uG/dL provides a blocking dose).
- 4 ml on abdomen blocked 35.8%
- 8 ml on abdomen blocked 81.7%

NRC Directive

- 1998 NRC asked States to consider providing KI to the general public in the event of a nuclear power plant accident

Recommendations

1. Evacuation is the protective action of choice.
2. The current policy of providing KI to Emergency Workers and Special Groups should be retained.
3. Where indicated (and upon appropriate medical consultation), KI should be used to effectively block the thyroid gland from uptake of radioactive iodine in children and pregnant women.
4. The Commonwealth should identify sources of KI that would be available for those who wish to acquire it.
5. The Commonwealth should consider stockpiling KI for use in a nuclear emergency.
6. The Commonwealth should develop plans that would permit rapid movement of any stockpiled KI in the event of an emergency that might call for its use.
7. The Commonwealth should provide the public and health care providers with information on the indications for and proper use of KI in response to nuclear emergencies.
8. The Commonwealth should encourage members of the public who are considering obtaining KI to consult, in advance, with their health care providers to see if KI is safe for them to use.

AP PHOTO

Reuters – Tuesday September 25 10:30 AM ET

- By Tom Doggett

Washington (Reuters) – The103 nuclear power reactors in the United States are vulnerable to acts of terrorism, and the Nuclear Regulatory Commission and other government agencies must impose stricter safety measures to protect the facilities, two watchdog groups said Tuesday.

“The NRC has acknowledged that it is unsure if the U.S. nuclear power plants could withstand the crash of large, commercial airplanes, such as the kind that attacked the World Trade Center and Pentagon. The facilities, all of which are more than 30 years old, were designed to withstand tornadoes, hurricanes and earthquakes.”