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NEED FOR PROCESS/RADIOCHEMISTS AT NUCLEAR POWER PLANTS

(Viewgraphs to be presented at the 1984 ACS Annual Meeting in Philadelphia)

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CONCLUSIONS FROM RADIOCHEMISTRY / PROCESS CHEMISTRY
SURVEY AND DISCUSSIONS

1. A MODEST JOB MARKET DOES EXIST FOR RADIOCHEMISTS /
PROCESS CHEMISTS AT NUCLEAR POWER PLANTS.
2. THE NUMBER OF GRADUATES IN RADIOCHEMISTRY IS
UNLIKELY TO MEET THE DEMAND.
3. THE COLLEGE COURSES AVAILABLE DO NOT COVER THE
PERCEIVED TRAINING NEEDS.
4. THE PERCEIVED NEEDS BY SOME POWER PLANT OPERATORS
ARE NOT NECESSARILY THE REAL NEEDS.
5. THE SHORTAGE OF RADIOCHEMISTS / PROCESS CHEMISTS
APPEARS CERTAIN TO INCREASE.

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NEED FOR PROCESS / RADIOCHEMISTS
AT NUCLEAR POWER PLANTS

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**RECOGNITION OF THE GROWING SHORTAGE
OF CHEMISTS IN NUCLEAR FIELDS**

- 1979 REPORT OF AD HOC COMMITTEE OF ACS DIVISION OF NUCLEAR CHEMISTRY AND TECHNOLOGY ON STATUS OF TRAINING OF NUCLEAR AND RADIOCHEMISTS
- 1979 ACS PANEL DISCUSSION ON DECLINE OF STUDENT ENROLLMENT AND DECREASED FUNDING IN NUCLEAR AND RADIOCHEMISTRY
- 1979 LETTER FROM CHAIRMAN OF ACS DNCT TO DOE REQUESTING CREATION OF NUCLEAR AND RADIO-CHEMISTRY BRANCH OF DIVISION OF CHEMICAL SCIENCES IN OFFICE OF BASIC ENERGY SCIENCES

RECOGNITION OF THE GROWING SHORTAGE
OF CHEMISTS IN NUCLEAR FIELDS
(Continued)

- 1983 PRESENTATION TO COMMITTEE ON NUCLEAR AND
RADIOCHEMISTRY OF NATIONAL ACADEMY OF SCIENCES
ON MANPOWER AND TRAINING NEEDS FOR RADIO-
CHEMISTRY STAFF AND THEIR RELATIONSHIP TO HEALTH
PHYSICS
- 1983 PRESENTATION TO COMMITTEE ON NUCLEAR AND
RADIOCHEMISTRY OF NAS ON RADIOCHEMISTRY SURVEY
OF U.S. NUCLEAR POWER PLANTS
- 1983 BRIEFING PRESENTED BY CHAIRMAN OF COMMITTEE ON
NUCLEAR AND RADIOCHEMISTRY TO BOARD ON
CHEMICAL SCIENCES AND TECHNOLOGY OF NATIONAL
ACADEMY OF SCIENCES ON STATUS OF NUCLEAR AND
RADIOCHEMISTS

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**DEFICIENCIES IN PERFORMING
RADIOCHEMISTRY/PROCESS CHEMISTRY OPERATIONS
AT NUCLEAR POWER PLANTS**

- TOO MUCH RELIANCE ON ANALYTICAL "PACKAGES"
- LACK OF ABILITY TO INTERPRET RESULTS OF ANALYSES
- FAILURE TO GATHER AND INTERPRET TREND INFORMATION
- LACK OF UNDERSTANDING OF CHEMICAL PROCESSES USED AT PLANTS
- LACK OF UNDERSTANDING OF "WATER CHEMISTRY"
- LACK OF KNOWLEDGE OF LONG-TERM CORROSION

RADIOCHEMISTRY AT NUCLEAR POWER PLANTS

(46 Replies out of 106 letters)

ORGANIZATIONAL STRUCTURE	%
RADIOCHEMISTRY IS SEPARATE FROM HEALTH PHYSICS	72
RADIOCHEMISTRY AND HEALTH PHYSICS ARE COMBINED	24
RADIOCHEMISTRY IS A FUNCTION UNDER HEALTH PHYSICS	4

LEVEL OF TRAINING	%
Ph. D.	7
M.S.	9
B. S.	39
On-The-Job-Training	17
Special Training (short courses, etc.)	21
"Other"	7

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AREAS OF GREATEST INTEREST
TO NUCLEAR POWER PLANT OPERATORS
(16 Replies out of 50 Letters)

	<u>YES</u>	<u>NO</u>	<u>MAYBE</u>
INTEREST IN PERSON WITH POWER PLANT CHEMISTRY AND RADIOCHEMISTRY	15	1	0
FAVOR AND SUPPORT FOR COOPERATIVE PROGRAM BETWEEN POWER PLANT AND QUALIFIED UNIVERSITY	10	3	3
INTEREST IN B. S. CHEMISTRY MAJOR WITH COURSE IN NUCLEAR POWER PLANT CHEMISTRY AND RADIOCHEMISTRY PLUS SUMMER INTERNSHIP AT POWER PLANT	10	2	2

AREAS OF CHEMISTRY TRAINING IMPORTANT
TO NUCLEAR POWER PLANT OPERATORS
(16 Replies Out of 50 Letters)

	<u>RATING SCALE</u>
	5/4/3/2/1
RADIOCHEMISTRY AS IT APPLIES TO INSTRUMENTATION AND TECHNIQUES	7/2/6/1/0
ELECTROCHEMISTRY AS IT APPLIES TO CORROSION CONTROL	4/4/1/6/1
ENVIRONMENTAL CHEMISTRY APPLIED TO PATHWAY MONITORING AND MODELING OF F.P.s, ACTINIDES, ETC.	1/4/6/2/3
SURFACE AND COLLOID CHEMISTRY APPLIED TO DECONTAMINATION OF SURFACES	1/5/5/3/2
SEPARATIONS CHEMISTRY (E.G., ION EXCHANGE AND SORPTION, APPLIED TO WASTE CLEANUP AND DISPOSAL, MAINTENANCE OF PRIMARY COOLING SYSTEM, ETC.)	6/5/3/1/1
RADIATION CHEMISTRY AS IT RELATES, FOR EXAMPLE, TO THE PRIMARY COOLING SYSTEM	5/6/2/2/0

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RECOGNIZED OPPORTUNITIES FOR EMPLOYING CHEMISTS
AT NUCLEAR POWER PLANTS

<u>OPPORTUNITIES</u>	<u>EMPLOYMENT</u>
NUMBER OF CHEMISTS IN NUCLEAR-RELATED ACTIVITIES (1983)	~3200
NUMBER OF CHEMISTS AT NUCLEAR POWER REACTORS (1983)	~220
NUMBER OF OPENINGS FOR CHEMISTS AT NUCLEAR POWER REACTORS (1983)	~27
APPROXIMATELY 40 NUCLEAR POWER REACTORS ARE "IN THE PIPELINE"	?

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TRAINING OFFERED IN RADIOCHEMISTRY*
(15 Replies Out of 30 Letters)

	NO. PER YEAR
B. S. DEGREE WITH EMPHASIS IN RADIOCHEMISTRY	2
M.S. DEGREE WITH EMPHASIS IN RADIOCHEMISTRY	1
Ph.D. WITH EMPHASIS IN RADIOCHEMISTRY	0.8
SHORT COURSE FOR PROFESSIONALS	7
SHORT COURSE FOR TECHNICIANS	25

* EXCLUSIVE OF SAN DIEGO STATE UNIVERSITY

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RADIOCHEMISTRY TRAINING AT SAN DIEGO STATE
UNIVERSITY OVER THE LAST TEN YEARS

<u>DEGREE</u>	<u>NUMBER</u>
B.S.	100
M.S.	10
Ph.D.	1