



UNION CARBIDE CORPORATION
P.O. BOX 8361, SOUTH CHARLESTON, WV 25303

Nuclear Materials Licensing Section
U.S. Nuclear Regulatory Commission, Region II
101 Marietta Street, NW, Suite 2900
Atlanta, GA 30323-0199

August 4, 1995

David Collins:

Attached are the revisions to our application for renewal of USNRC License Number 47-00260-02 as you suggested in our telephone conversation.

I have added wording to Item 6. Purpose of Form 313 as you suggested. Changes are in italics.

I have added information to our Draft Radiological Control Manual as was suggested in the Reg. Guides that you sent to me. A complete chapter on emergency procedures was added as well as sections on procedures for installation of radiation sources and dosimeter calibration. There were also several minor changes incorporated as a result of reviewing the suggestions in the Reg. Guides.

If you should have any questions or need more information, please call me at 304/747-5314.

Yours truly,

Michael L. Green
Radiation Protection Officer
So. Charleston Technical Center

Information in this record was deleted
in accordance with the Freedom of Information
Act, exemptions 6
FOIA- 2007-0179

D-13

Item 5. Radioactive Material

	<u>Radioisotope</u>	<u>Form</u>	<u>Max. Amount</u>
A	Any byproduct material, except alpha emitters with atomic numbers 1 through 83 inclusive	Any sealed source registered pursuant to the requirement of 10 CFR 32.210	300 curies total
B	Americium 241	Any sealed neutron source registered pursuant to the requirements of 10 CFR 32.210	25 curies total
C	Hydrogen 3	Any	250 millicuries
D	Carbon 14	Any	750 millicuries

Item 6. Purpose (Revised 7/26/95, revisions in italic print)

A & B	Possession, storage and/or use in the following: 1) Research and development as defined in 10 CFR 30.4 2) Maintenance, repair, installation, removal and replacement of sealed sources, operation testing, and servicing of gauging devices including the performance of initial radiation surveys and leak testing of sealed sources <i>for the UCC So. Charleston Technical Center, other UCC Locations and UCC Temporary job sites.</i> 3) In gas chromatographs for sample analysis 4) Instrument calibration <i>for the UCC So. Charleston Technical Center, other UCC Locations and occasionally for non-UCC facilities.</i> 5) Field analysis of level and/or density <i>for the UCC So. Charleston Technical Center, other UCC Locations and UCC Temporary job sites.</i> 6) Testing steel vessels for carbon buildup (Am-241 only) <i>for the UCC So. Charleston Technical Center, other UCC Locations and UCC Temporary job sites.</i>
C&D	For possession, storage and/or use in research and development as defined in 10 CFR 30.4.

Item 7. Responsible Individuals Training and Experience

See attached

Item 8. Training for Individuals

See Chapter XII, Technical Center Radiological Control Manual. A copy of training materials will be provide upon request.

Item 9. Facilities and Equipment

See Chapter XI and Appendix III of Technical Center Radiological Control Manual.

Item 10. Radiation Safety Program

See Technical Center Radiological Control Manual.

Item 11. Waste Management

See Chapter IV, Technical Center Radiological Control Manual.

Item 7 Individual Training and Experience

RADIATION SAFETY COMMITTEE

Training and Experience

The following people are current members of the Radiation Safety Committee.

J. H. Brubaker	Management
W. K. Becher	Nucleonics Applications
M. L. Green (RPO)	Nucleonics Applications/Radiation Safety
P. D. Johnson	Purchasing
K. B. Gasaway	Nucleonic Applications/Radiation Safety
M. A. Patel	Industrial Hygiene

Each person's training and experience are on the following pages.

*Mr. James A. Boggess has retired and is no longer a member of the Radiation Safety Committee. His qualifications are still listed since he is occasionally brought back to work on a spot basis.

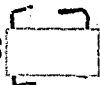
M. L. GREEN

<u>TYPE OF TRAINING</u>	<u>WHERE TRAINED</u>	<u>DURATION OF TRAINING</u>	<u>ON THE JOB</u>	<u>FORMAL COURSE</u>
a. Principles and practices of radiation protection	Univ. of Kentucky	9 months	No	Yes
	Univ. of Kentucky	3 months	Yes	No
	Mound Lab. (AEC)	39 months	Yes	No
	Univ. of Cincinnati	8 months	No	Yes
	Union Carbide Corp.	6 months	Yes	No
	IsoTopics/NUS Corp	40 hr	No	Yes
	Harvard School of Public Health (3/91)	1 week	No	Yes
b. Radioactivity measurement standardization and monitoring techniques and instruments	Univ. of Kentucky	9 months	No	Yes
	Univ. of Kentucky	3 months	Yes	No
	Mound Lab. (AEC)	39 months	Yes	No
	Univ. of Cincinnati	8 months	Yes	No
	Union Carbide Corp.	6 months	Yes	No
	Harvard School of Public Health (4-84)	1 week	No	Yes
	IsoTopics/NUS Corp	40 hr	No	Yes
Harvard School of Public Health (3/91)	1 week	No	Yes	
c. Mathematics and calculations basic to the use and measurement of radioactivity	Univ. of Kentucky	9 months	No	Yes
	Univ. of Cincinnati	8 months	No	Yes
	Union Carbide Corp.	3 months	Yes	No
	Mound Lab. (AEC)	39 months	Yes	No
	IsoTopics/NUS Corp	40 hr	No	Yes
	Harvard School of Public Health (3/91)	1 week	No	Yes
d. Biological effects of radiation	Univ. of Kentucky	5 days	No	Yes.
	IsoTopics/NUS Corp	40 hr	No	Yes
	Harvard School of Public Health (3/91)	1 week	No	Yes

EXPERIENCE (M. L. GREEN)

<u>ISOTOPE</u>	<u>MAXIMUM AMOUNT</u>	<u>WHERE EXPERIENCED GAINED</u>	<u>DURATION OF EXPERIENCE</u>	<u>TYPE OF USE</u>
U-238	Kilograms	Univ. of Kentucky	3 months	Sub-critical Reactor
Classified	Classified	Monsanto Research Corp.	39 months	Classified
Cs-137	Curies	Union Carbide Corp.	24 years	Gauging
Ra-226	m Curies	Union Carbide Corp.	3 years	Gauging
Xe-133	m Curies	Union Carbide Corp.	6 months	Tracer
Cs-137	m Curies	Union Carbide Corp.	6 months	Tracer
Am-241	Curies	Union Carbide Corp.	21 years	Testing and Gauging
C-14	m Curies	Union Carbide Corp.	7 years	Tracer Studies
H-3	m Curies	Union Carbide Corp.	1 month	Tracer Studies
Rn-222 & daughters	pCi	Union Carbide Corp	2 year	NORM Studies

EDUCATION

B.S.  Physics - University of Kentucky

MLG

I. A. BOGCESS

ISOTOPE	WHERE EXPERIENCED GAINED	DURATION OF EXPERIENCE	ON THE JOB	FORMAL COURSE
a. Principles and practices of radiation protection	Union Carbide Corp.	8 months	Yes	No
	UCC RPO School	2 weeks	Yes	No
	Army CBR Training	2 weeks	No	Yes
b. Radioactivity measurement standardization and monitoring techniques and instruments	Union Carbide Corp.	8 years	Yes	No
	UCC RPO School	2 weeks	Yes	No
	Army CBR Training	2 weeks	No	Yes
c. Mathematics and calculations basic to the use and measurement of radioactivity	Union Carbide Corp.	8 years	Yes	No
	UCC RPO School	2 weeks	Yes	Yes
	Army CBR Training	2 weeks	No	Yes
d. Biological effects of radiation	Union Carbide Corp.	8 years	Yes	No.
	UCC RPO School	2 weeks	Yes	Yes
	Army CBR Training	2 weeks	No	Yes

EXPERIENCE (J. A. BOGCESS)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCED GAINED	DURATION OF EXPERIENCE	TYPE OF USE
CS-137	Curies	Union Carbide Corp.	28 years	Density and Level Gauge, Tracer
Co-60	Curies	Union Carbide Corp.	11 years	Density and Level Gauge
Ra-226 & daughters	Millicuries	Union Carbide Corp.	11 years	Density and Level Gauge, Tracer
C-14	m Curies	Union Carbide Corp.	10 years	R&D Tracer
H-3	m Curies	Union Carbide Corp.	6 years	Tracer
Xe-133	m Curies	Union Carbide Corp.	3 months	Tracer
Kr-79	m Curies	Union Carbide Corp.	3 months	Tracer
Sr-90	m Curies	Union Carbide Corp.	8 years	R&D
Au-198	m Curies	Union Carbide Corp.	1 year	Tracer
I-131	m Curies	Union Carbide Corp.	3 months	Tracer
Cs-131	m Curies	Union Carbide Corp.	3 months	Tracer
Rb-86	m Curies	Union Carbide Corp.	3 months	Tracer
Am-241-Be	m Curies	Union Carbide Corp.	20 years	Carbon Measurement

J. H. BRUBAKER

<u>TYPE OF TRAINING</u>	<u>WHERE TRAINED</u>	<u>DURATION OF TRAINING</u>	<u>ON THE JOB</u>	<u>FORMAL COURSE</u>
a. Principles and practices of radiation protection	Union Carbide Corp. RPO School	2 weeks	Yes	Yes
b. Radioactivity measurement standardization and monitoring techniques and instruments	Union Carbide Corp. RPO School	2 weeks	Yes	Yes
c. Mathematics and calculations basic to the use and measurement of radioactivity	Union Carbide Corp. RPO School	8 years	Yes	No
	Univ. of Florida	9 months	No	Yes
d. Biological effects of radiation	Union Carbide Corp.	2 weeks	Yes	Yes

EXPERIENCE

<u>ISOTOPE</u>	<u>MAXIMUM AMOUNT</u>	<u>WHERE EXPERIENCE GAINED</u>	<u>DURATION OF EXPERIENCE</u>	<u>TYPE OF USE</u>
Cs-137	Curies	Union Carbide Corp.	8 yrs.	Process Gauging
Am-241	m Curies	Union Carbide Corp.	8 yrs.	Carbon Detection

EDUCATION

<u>Degree</u>	<u>College or University</u>	<u>Date Acquired</u>	<u>Major</u>
AA	Hershey Jr. College		Science
BS	Univ. of Florida		Physics
MS	Univ. of Florida		Astronomy-Physics

W. K. BECHER

<u>TYPE OF TRAINING</u>	<u>WHERE TRAINED</u>	<u>DURATION OF TRAINING</u>	<u>ON THE JOB</u>	<u>FORMAL COURSE</u>
a. Principles and practices of radiation protection	Electric Corp.			
	Westinghouse	4 years	Yes	Yes
	CGR Medical Corp.	5 years	Yes	No
	Union Carbide Corp.			
b. Radioactivity measurement standardization and monitoring techniques and instruments	Training for RPO	80 hours	Yes	Yes
	USAF Keesler AFB	2 weeks	No	Yes
	Electric Corp.			
	Westinghouse	4 years	Yes	Yes
c. Mathematics and calculations basic to the use and measurement of radioactivity	CGR Medical Corp.	5 years	Yes	No
	Union Carbide Corp.			
	Training for RPO	80 hours	Yes	Yes
	USAF Keesler AFB	2 weeks	No	Yes
d. Biological effects of radiation	Electric Corp.			
	Westinghouse	4 years	Yes	Yes
	CGR Medical Corp.	5 years	Yes	No
	Union Carbide Corp.			
Training for RPO	USAF Keesler AFB	80 hours	Yes	Yes
	USAF Keesler AFB	2 weeks	No	Yes

EXPERIENCE

<u>ISOTOPE</u>	<u>MAXIMUM AMOUNT</u>	<u>WHERE EXPERIENCE GAINED</u>	<u>DURATION OF EXPERIENCE</u>	<u>TYPE OF USE</u>
Co ⁶⁰	Curies	Westinghouse Electric	4 yrs.	Medical
Co ⁶⁰	Curies	CGR Medical Corp.	5 yrs.	Medical
Cs-137	m Curies	Union Carbide Corp.	18 yrs.	Density & Level Gauge
Am-241 Be	Neutron	Union Carbide Corp.	18 yrs.	Carbon Measuremt.

K. B. Gasaway

TYPE OF TRAINING	WHERE	DURATION OF COURSE	ON THE JOB	FORMAL
a. Principals and practices of radiation protection	Eagle Environmental Inc, Houston, TX	1.5 Years	Yes	No
	ARCO Chemical Co. Radiation Consultants, Inc. Houston, TX	3 Years	Yes	No
	RSO Certification Univ. of Houston	16 hours	No	Yes
	-Clear Lake, TX Radiation Safety	1 College Semester	No	Yes
	Suntrac Services, Inc. NORM Training	16 hours	No	Yes
b. Radioactivity measurement standardization and monitoring techniques and instruments	Eagle Environmental Inc, Houston, TX	1.5 Years	Yes	No
	ARCO Chemical Co. Radiation Consultants, Inc. Houston, TX	3 Years	Yes	No
	RSO Certification Univ. of Houston	16 hours	No	Yes
	-Clear Lake, TX Radiation Safety	1 College Semester	No	Yes
	Suntrac Services, Inc. NORM Training	16 hours	No	Yes
c. Mathematics and calculations basic to the use and measurement of radioactivity	Eagle Environmental Inc, Houston, TX	1.5 Years	Yes	No
	ARCO Chemical Co. Radiation Consultants, Inc. Houston, TX	3 Years	Yes	No
	RSO Certification University of Houston	16 hours	No	Yes
	-Clear Lake, TX Radiation Safety	1 College Semester	No	Yes
	Suntrac Services, Inc. NORM Training	16 hours	No	Yes
d. Biological effects of radiation	Eagle Environmental Inc, Houston, TX	1.5 Years	Yes	No
	ARCO Chemical Co. Radiation Consultants, Inc. Houston, TX	3 Years	Yes	No
	RSO Certification University of Houston	16 hours	No	Yes
	-Clear Lake, TX Radiation Safety	1 College Semester	No	Yes
	Suntrac Services, Inc. NORM Training	16 hours	No	Yes

EXPERIENCE (K B GASAWAY)

Supplement to USNRC Form . . .
Renewal of USNRC License No. 47-00260-02
Union Carbide Corp., Technical Center, So. Charleston, WV 25303

January 17, 1995
revised 8/4/95

<u>ISOTOPE</u>	<u>MAXIMUM AMOUNT</u>	<u>WHERE EXPERIENCED GAINED</u>	<u>DURATION OF EXPERIENCE</u>	<u>TYPE OF USE</u>
Cs-137	m Curies	ARCO Chemical Co.	3 Years	Level Gauge
NORM	uR/Hr&CPM	ARCO Chemical Co.	3 Years Contaminant	Industrial

EDUCATION

<u>Degree</u>	<u>College or University</u>	<u>Date Acquired</u>	<u>Major</u>
BS	University of Houston Clear Lake, TX	<input type="text"/>	Natural and Applied Science - Industrial Hygiene and Safety

PHILIP D. JOHNSON

Mr Philip Johnson has no formal training or experience with radioactive materials. His sole purpose for sitting on the committee is to provide a direct link between the Committee and the Purchasing Department. He has all responsibility for processing purchase orders for radioactive material controlled by this license

EDUCATION

West Virginia University, Morgantown, WV 26506
Bachelor of Science in Industrial Engineering
Date of Graduation:

[redacted]

EMPLOYMENT

Purchasing Agent: Union Carbide Chemicals & Plastics Co., Inc., South Charleston, WV, August 1990 to present. Write purchase agreements and contracts for a variety of products and services.

M. A. PATEL

Mr Patel is a Certified Industrial Hygienist. He earned a B.S. in Biology and Chemistry in [redacted] an M.S. in Biochemistry in [redacted] and a Masters of Science in Public Health in [redacted] from the University of Michigan. He has also successfully completed a Union Carbide class in radiation safety. He is currently the site Industrial Hygienist.



UNION CARBIDE CORPORATION
P.O. BOX 8361, SOUTH CHARLESTON, WV 25303

Nuclear Materials Licensing Section
U.S. Nuclear Regulatory Commission, Region II
101 Marietta Street, NW, Suite 2900
Atlanta, GA 30323-0199

August 4, 1995

David Collins:

Attached are the revisions to our application for renewal of USNRC License Number 47-00260-02 as you suggested in our telephone conversation.

I have added wording to Item 6. Purpose of Form 313 as you suggested. Changes are in italics.

I have added information to our Draft Radiological Control Manual as was suggested in the Reg. Guides that you sent to me. A complete chapter on emergency procedures was added as well as sections on procedures for installation of radiation sources and dosimeter calibration. There were also several minor changes incorporated as a result of reviewing the suggestions in the Reg. Guides.

If you should have any questions or need more information, please call me at 304/747-5314.

Yours truly,

A handwritten signature in cursive script that reads "Michael L. Green".

Michael L. Green
Radiation Protection Officer
So. Charleston Technical Center

D-13

Item 5. Radioactive Material

	<u>Radioisotope</u>	<u>Form</u>	<u>Max. Amount</u>
A	Any byproduct material, except alpha emitters with atomic numbers 1 through 83 inclusive	Any sealed source registered pursuant to the requirement of 10 CFR 32.210	300 curies total
B	Americium 241	Any sealed neutron source registered pursuant to the requirements of 10 CFR 32.210	25 curies total
C	Hydrogen 3	Any	250 millicuries
D	Carbon 14	Any	750 millicuries

Item 6. Purpose (Revised 7/26/95, revisions in italic print)

A & B	Possession, storage and/or use in the following: 1) Research and development as defined in 10 CFR 30.4 2) Maintenance, repair, installation, removal and replacement of sealed sources, operation testing, and servicing of gauging devices including the performance of initial radiation surveys and leak testing of sealed sources <i>for the UCC So. Charleston Technical Center, other UCC Locations and UCC Temporary job sites.</i> 3) In gas chromatographs for sample analysis 4) Instrument calibration <i>for the UCC So. Charleston Technical Center, other UCC Locations and occasionally for non-UCC facilities.</i> 5) Field analysis of level and/or density <i>for the UCC So. Charleston Technical Center, other UCC Locations and UCC Temporary job sites.</i> 6) Testing steel vessels for carbon buildup (Am-241 only) <i>for the UCC So. Charleston Technical Center, other UCC Locations and UCC Temporary job sites.</i>
C&D	For possession, storage and/or use in research and development as defined in 10 CFR 30.4.

Item 7. Responsible Individuals Training and Experience

See attached

Item 8. Training for Individuals

See Chapter XII, Technical Center Radiological Control Manual. A copy of training materials will be provide upon request.

Item 9. Facilities and Equipment

See Chapter XI and Appendix III of Technical Center Radiological Control Manual.

Item 10. Radiation Safety Program

See Technical Center Radiological Control Manual.

Item 11. Waste Management

See Chapter IV, Technical Center Radiological Control Manual.

Item 7 Individual Training and Experience

RADIATION SAFETY COMMITTEE

Training and Experience

The following people are current members of the Radiation Safety Committee.

J. H. Brubaker	Management
W. K. Becher	Nucleonics Applications
M. L. Green (RPO)	Nucleonics Applications/Radiation Safety
P. D. Johnson	Purchasing
K. B. Gasaway	Nucleonic Applications/Radiation Safety
M. A. Patel	Industrial Hygiene

Each person's training and experience are on the following pages.

*Mr. James A. Boggess has retired and is no longer a member of the Radiation Safety Committee. His qualifications are still listed since he is occasionally brought back to work on a spot basis.

M. L. GREEN

<u>TYPE OF TRAINING</u>	<u>WHERE TRAINED</u>	<u>DURATION OF TRAINING</u>	<u>ON THE JOB</u>	<u>FORMAL COURSE</u>
a. Principles and practices of radiation protection Health (3/91)	Univ. of Kentucky	9 months	No	Yes
	Univ. of Kentucky	3 months	Yes	No
	Mound Lab. (AEC)	39 months	Yes	No
	Univ. of Cincinnati	8 months	No	Yes
	Union Carbide Corp.	6 months	Yes	No
	IsoTopics/NUS Corp	40 hr	No	Yes
	Harvard School of Public	1 week	No	Yes
b. Radioactivity measurement standardization and monitoring techniques and instruments Health (4-84) Health (3/91)	Univ. of Kentucky	9 months	No	Yes
	Univ. of Kentucky	3 months	Yes	No
	Mound Lab. (AEC)	39 months	Yes	No
	Univ. of Cincinnati	8 months	Yes	No
	Union Carbide Corp.	6 months	Yes	No
	Harvard School of Public	1 week	No	Yes
	IsoTopics/NUS Corp	40 hr	No	Yes
Harvard School of Public	1 week	No	Yes	
c. Mathematics and calculations basic to the use and measurement of radioactivity Health (3/91)	Univ. of Kentucky	9 months	No	Yes
	Univ. of Cincinnati	8 months	No	Yes
	Union Carbide Corp.	3 months	Yes	No
	Mound Lab. (AEC)	39 months	Yes	No
	IsoTopics/NUS Corp	40 hr	No	Yes
	Harvard School of Public	1 week	No	Yes
d. Biological effects of radiation Health (3/91)	Univ. of Kentucky	5 days	No	Yes.
	IsoTopics/NUS Corp	40 hr	No	Yes
	Harvard School of Public	1 week	No	Yes

EXPERIENCE (M. L. GREEN)

<u>ISOTOPE</u>	<u>MAXIMUM AMOUNT</u>	<u>WHERE EXPERIENCED GAINED</u>	<u>DURATION OF EXPERIENCE</u>	<u>TYPE OF USE</u>
U-238	Kilograms	Univ. of Kentucky	3 months	Sub-critical Reactor
Classified	Classified	Monsanto Research Corp.	39 months	Classified
Cs-137	Curies	Union Carbide Corp.	24 years	Gauging
Ra-226	m Curies	Union Carbide Corp.	3 years	Gauging
Xe-133	m Curies	Union Carbide Corp.	6 months	Tracer
Cs-137	m Curies	Union Carbide Corp.	6 months	Tracer
Am-241	Curies	Union Carbide Corp.	21 years	Testing and Gauging
C-14	m Curies	Union Carbide Corp.	7 years	Tracer Studies
H-3	m Curies	Union Carbide Corp.	1 month	Tracer Studies
Rn-222 & daughters	pCi	Union Carbide Corp	2 year	NORM Studies

EDUCATION

B.S. Physics - University of Kentucky

MLG

J. A. BOGGESS

ISOTOPE	WHERE EXPERIENCED GAINED	DURATION OF EXPERIENCE	ON THE JOB	FORMAL COURSE
a. Principles and practices of radiation protection	Union Carbide Corp.	8 months	Yes	No
	UCC RPO School	2 weeks	Yes	No
	Army CBR Training	2 weeks	No	Yes
b. Radioactivity measurement standardization and monitoring techniques and instruments	Union Carbide Corp.	8 years	Yes	No
	UCC RPO School	2 weeks	Yes	No
	Army CBR Training	2 weeks	No	Yes
c. Mathematics and calculations basic to the use and measurement of radioactivity	Union Carbide Corp.	8 years	Yes	No
	UCC RPO School	2 weeks	Yes	Yes
	Army CBR Training	2 weeks	No	Yes
d. Biological effects of radiation	Union Carbide Corp.	8 years	Yes	No.
	UCC RPO School	2 weeks	Yes	Yes
	Army CBR Training	2 weeks	No	Yes

EXPERIENCE (J. A. BOGGESS)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCED GAINED	DURATION OF EXPERIENCE	TYPE OF USE
CS-137	Curies	Union Carbide Corp.	28 years	Density and Level Gauge, Tracer
Co-60	Curies	Union Carbide Corp.	11 years	Density and Level Gauge
Ra-226 & daughters	Millicuries	Union Carbide Corp.	11 years	Density and Level Gauge, Tracer
C-14	m Curies	Union Carbide Corp.	10 years	R&D Tracer
H-3	m Curies	Union Carbide Corp.	6 years	Tracer
Xe-133	m Curies	Union Carbide Corp.	3 months	Tracer
Kr-79	m Curies	Union Carbide Corp.	3 months	Tracer
Sr-90	m Curies	Union Carbide Corp.	8 years	R&D
Au-198	m Curies	Union Carbide Corp.	1 year	Tracer
I-131	m Curies	Union Carbide Corp.	3 months	Tracer
Cs-131	m Curies	Union Carbide Corp.	3 months	Tracer
Rb-86	m Curies	Union Carbide Corp.	3 months	Tracer
Am-241-Be	m Curies	Union Carbide Corp.	20 years	Carbon Measurement

J. H. BRUBAKER

<u>TYPE OF TRAINING</u>	<u>WHERE TRAINED</u>	<u>DURATION OF TRAINING</u>	<u>ON THE JOB</u>	<u>FORMAL COURSE</u>
a. Principles and practices of radiation protection	Union Carbide Corp. RPO School	2 weeks	Yes	Yes
b. Radioactivity measurement standardization and monitoring techniques and instruments	Union Carbide Corp. RPO School	2 weeks	Yes	Yes
c. Mathematics and calculations basic to the use and measurement of radioactivity	Union Carbide Corp. RPO School	8 years	Yes	No
	Univ. of Florida	9 months	No	Yes
d. Biological effects of radiation	Union Carbide Corp.	2 weeks	Yes	Yes

EXPERIENCE

<u>ISOTOPE</u>	<u>MAXIMUM AMOUNT</u>	<u>WHERE EXPERIENCE GAINED</u>	<u>DURATION OF EXPERIENCE</u>	<u>TYPE OF USE</u>
Cs-137	Curies	Union Carbide Corp.	8 yrs.	Process Gauging
Am-241	m Curies	Union Carbide Corp.	8 yrs.	Carbon Detection

EDUCATION

<u>Degree</u>	<u>College or University</u>	<u>Date Acquired</u>	<u>Major</u>
AA	Hershey Jr. College		Science
BS	Univ. of Florida		Physics
MS	Univ. of Florida		Astronomy-Physics

W. K. BECHER

<u>TYPE OF TRAINING</u>	<u>WHERE TRAINED</u>	<u>DURATION OF TRAINING</u>	<u>ON THE JOB</u>	<u>FORMAL COURSE</u>
a. Principles and practices of radiation protection	Electric Corp. Westinghouse	4 years	Yes	Yes
	CGR Medical Corp.	5 years	Yes	No
	Union Carbide Corp. Training for RPO	80 hours	Yes	Yes
	USAF Keesler AFB	2 weeks	No	Yes
b. Radioactivity measurement standardization and monitoring techniques and instruments	Electric Corp. Westinghouse	4 years	Yes	Yes
	CGR Medical Corp.	5 years	Yes	No
	Union Carbide Corp. Training for RPO	80 hours	Yes	Yes
	USAF Keesler AFB	2 weeks	No	Yes
c. Mathematics and calculations basic to the use and measurement of radioactivity	Electric Corp. Westinghouse	4 years	Yes	Yes
	CGR Medical Corp.	5 years	Yes	No
	Union Carbide Corp. Training for RPO	80 hours	Yes	Yes
	USAF Keesler AFB	2 weeks	No	Yes
d. Biological effects of radiation	Electric Corp. Westinghouse	4 years	Yes	Yes
	CGR Medical Corp.	5 years	Yes	No
	Union Carbide Corp. Training for RPO	80 hours	Yes	Yes
	USAF Keesler AFB	2 weeks	No	Yes

EXPERIENCE

<u>ISOTOPE</u>	<u>MAXIMUM AMOUNT</u>	<u>WHERE EXPERIENCE GAINED</u>	<u>DURATION OF EXPERIENCE</u>	<u>TYPE OF USE</u>
Co ⁶⁰	Curies	Westinghouse Electric	4 yrs.	Medical
Co ⁶⁰	Curies	CGR Medical Corp.	5 yrs.	Medical
Cs-137	m Curies	Union Carbide Corp.	18 yrs.	Density & Level Gauge
Am-241 Be	Neutron	Union Carbide Corp.	18 yrs.	Carbon Measuremt.

K. B. Gasaway

TYPE OF TRAINING	WHERE	DURATION OF COURSE	ON THE JOB	FORMAL
a. Principals and practices of radiation protection	Eagle Environmental Inc, Houston, TX	1.5 Years	Yes	No
	ARCO Chemical Co. Radiation Consultants, Inc. Houston, TX	3 Years	Yes	No
	RSO Certification Univ. of Houston -Clear Lake, TX	16 hours	No	Yes
	Radiation Safety Suntrac Services, Inc.	1 College Semester	No	Yes
	NORM Training	16 hours	No	Yes
b. Radioactivity measurement standardization and monitoring techniques and instruments	Eagle Environmental Inc, Houston, TX	1.5 Years	Yes	No
	ARCO Chemical Co. Radiation Consultants, Inc. Houston, TX	3 Years	Yes	No
	RSO Certification Univ. of Houston -Clear Lake, TX	16 hours	No	Yes
	Radiation Safety Suntrac Services, Inc.	1 College Semester	No	Yes
	NORM Training	16 hours	No	Yes
c. Mathematics and calculations basic to the use and measurement of radioactivity	Eagle Environmental Inc, Houston, TX	1.5 Years	Yes	No
	ARCO Chemical Co. Radiation Consultants, Inc. Houston, TX	3 Years	Yes	No
	RSO Certification University of Houston -Clear Lake, TX	16 hours	No	Yes
	Radiation Safety Suntrac Services, Inc.	1 College Semester	No	Yes
	NORM Training	16 hours	No	Yes
d. Biological effects of radiation	Eagle Environmental Inc, Houston, TX	1.5 Years	Yes	No
	ARCO Chemical Co. Radiation Consultants, Inc. Houston, TX	3 Years	Yes	No
	RSO Certification University of Houston -Clear Lake, TX	16 hours	No	Yes
	Radiation Safety Suntrac Services, Inc.	1 College Semester	No	Yes
	NORM Training	16 hours	No	Yes

EXPERIENCE (K B GASAWAY)

Supplement to USNRC Form J
Renewal of USNRC License No. 47-00260-02
Union Carbide Corp., Technical Center, So. Charleston, WV 25303

January 17, 1995
revised 8/4/95

<u>ISOTOPE</u>	<u>MAXIMUM AMOUNT</u>	<u>WHERE EXPERIENCED GAINED</u>	<u>DURATION OF EXPERIENCE</u>	<u>TYPE OF USE</u>
Cs-137	m Curies	ARCO Chemical Co.	3 Years	Level Gauge
NORM	uR/Hr&CPM	ARCO Chemical Co.	3 Years Contaminant	Industrial

EDUCATION

<u>Degree</u>	<u>College or University</u>	<u>Date Acquired</u>	<u>Major</u>
BS	University of Houston Clear Lake, TX	<input type="text"/>	Natural and Applied Science - Industrial Hygiene and Safety

Supplement to USNRC Form 3
Renewal of USNRC License No. 47-00260-02
Union Carbide Corp., Technical Center, So. Charleston, WV 25303

January 17, 1995
revised 8/4/95

PHILIP D. JOHNSON

Mr Philip Johnson has no formal training or experience with radioactive materials. His sole purpose for sitting on the committee is to provide a direct link between the Committee and the Purchasing Department. He has all responsibility for processing purchase orders for radioactive material controlled by this license

EDUCATION

West Virginia University, Morgantown, WV 26506
Bachelor of Science in Industrial Engineering
Date of Graduation:

EMPLOYMENT

Purchasing Agent: Union Carbide Chemicals & Plastics Co., Inc., South Charleston, WV, August 1990 to present. Write purchase agreements and contracts for a variety of products and services.

M. A. PATEL

Mr Patel is a Certified Industrial Hygienist. He earned a B.S. in Biology and Chemistry in [1969] an M.S. in Biochemistry in [1972] and a Masters of Science in Public Health in [1977] from the University of Michigan. He has also successfully completed a Union Carbide class in radiation safety. He is currently the site Industrial Hygienist.

M. L. Green (5/99)

TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB	FORMAL COURSE
a. Principles and practices of radiation protection	Univ. of Kentucky	9 mo.	No	Yes
	Univ. of Kentucky	3 mo.	Yes	No
	Mound Lab. (AEC)	39 mo.	Yes	No
	Univ. of Cincinnati	8 mo.	No	Yes
	Union Carbide	29 yr.	Yes	No
	IsoTopic/NUS	40 hr	No	Yes
	Harvard	40 hr	No	Yes
b. Radioactivity measurement standardization and monitoring techniques and instruments	Univ. of Kentucky	9 mo.	No	Yes
	Univ. of Kentucky	3 mo.	Yes	No
	Mound Lab. (AEC)	39 mo.	Yes	No
	Univ. of Cin.	8 mo.	No	Yes
	Union Carbide	29 yr.	Yes	No
	IsoTopic/NUS	40 hr	No	Yes
	Harvard 4/84	40 hr	No	Yes
Harvard 3/91	40 hr	No	Yes	
c. Mathematics and calculations basic to the use and measurement of radioactivity	Univ. of Kentucky	9 mo.	No	Yes
	Univ. of Kentucky	3 mo.	Yes	No
	Mound Lab. (AEC)	39 mo.	Yes	No
	Harvard	40 hr	No	Yes
	Union Carbide	29 yr.	Yes	No
	IsoTopic/NUS	40 hr	No	Yes
d. Biological effects of radiation	Univ. of Kentucky	40 hr	No	Yes
	IsoTopics/NUS	40 hr	No	Yes
	Harvard	40 hr	No	Yes
	Union Carbide Corp.	29 yr	Yes	No

EXPERIENCE

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Cs-137	Curies	Union Carbide Corp.	29 yrs.	Process Gauges
Am-241 Be	Curie	Union Carbide Corp.	29 yrs.	Carbon Block Meas.
U-238	Kilograms	Univ. of Ky	3 mo.	Sub-critical reactor
Classified	Classified	Mound Lab. (AEC)	39 mo.	Classified
Ra-226	mCi	Union Carbide Corp.	3 yrs.	Gauging
Xe-133	mCi	Union Carbide Corp.	6 mo.	Tracer Study
Cs-137	mCi	Union Carbide Corp.	6 mo.	Tracer Study
Am-241	mCi	Union Carbide Corp.	29 yrs.	Testing & Gauging
C-14	mCi	Union Carbide Corp.	9 yrs	Tracer Study
H-3	mCi	Union Carbide Corp.	1 mo.	Tracer Study
Rn-222	pCi	Union Carbide Corp.	7 yrs.	NORM Studies
Nat. U & Th	pCi	Union Carbide Corp	5 yrs.	Site Remediation

EDUCATION

BS-Physics] University of Kentucky (b)(6)