



135 Walnut Street • Pottstown, PA 19464 • 327-4373

March 20, 1985

MS12

122

U.S. Nuclear Regulatory Commission  
Region I  
Attention: Mr. Jack Davis  
631 Park Avenue  
King of Prussia, Pa. 19406

Gentlemen:

Enclosed are the revised pages for our application for a byproduct material license. I believe that we have made all the revisions agreed upon at the meeting between Mr. Jack Davis of your staff and our Radiation Safety Officer Mr. Martin Bourquin.

One additional point that needed clarification was when Mr. Bourquin would be present at the facility. Initially, he will be present whenever work involving licensed material is being performed. This will continue until such time that ASK, INC., has an additional person, qualified by training and experience, to directly oversee the work. This person's qualifications shall be approved by the Radiation Safety Officer and shall include, as a minimum, our supervisors training course and one thousand hours of on the job training in radiation protection.

We have also enclosed a general procedure for the decontamination and repair of equipment, and for performing an efficiency check on our scaler system.

I trust that this will resolve all of your questions but should you have any questions or need any further information please contact Mr. Martin Bourquin at 215-948-9696.

Yours truly,

*John J. Allen*  
John J. Allen  
President ASK, INC.

Encl.

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37-20803-01 PDR

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MAR 25 1985

READING  
378-9292

KING OF PRUSSIA  
337-3183

ALLENTOWN  
770-0861

ML10

LANCASTER  
299-1566

FORM NRC-313 I  
(1-79)  
10 CFR 30

U.S. NUCLEAR REGULATORY COMMISSION

1. APPLICATION FOR:  
(Check and/or complete as appropriate)

APPLICATION FOR BYPRODUCT MATERIAL LICENSE  
INDUSTRIAL

X a. NEW LICENSE

b. AMENDMENT TO:  
LICENSE NUMBER

c. RENEWAL OF:  
LICENSE NUMBER

See attached instructions for details.

Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety, and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland.

2. APPLICANT'S NAME (Institution, firm, person, etc.)

ASK, Inc. 215-327-4373

TELEPHONE NUMBER: AREA CODE - NUMBER EXTENSION

3. NAME OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION

Martin W. Bourquin, RSO 215-948-9696

TELEPHONE NUMBER: AREA CODE - NUMBER EXTENSION

4. APPLICANT'S MAILING ADDRESS (Include Zip Code)

135 Walnut Street  
Pottstown, PA 19464

5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED  
(Include Zip Code)

See Attachment

(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)

6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL

(See Items 16 and 17 for required training and experience of each individual named below)

FULL NAME

TITLE

a. See Attachment

b.

c.

7. RADIATION PROTECTION OFFICER

Martin W. Bourquin (resume attached)

Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.

8. LICENSED MATERIAL

L I N E  NO.	ELEMENT AND MASS NUMBER  A	CHEMICAL AND/OR PHYSICAL FORM  B	NAME OF MANUFACTURER AND MODEL NUMBER (If Sealed Source)  C	MAXIMUM NUMBER OF MILLCURIES AND/OR SEALED SOURCES AND MAXIMUM ACTI- VITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME  D
(1)	See attachment			
(2)				
(3)				
(4)				
DESCRIBE USE OF LICENSED MATERIAL E				
(1)				
(2)				
(3)				
(4)				

## 9. STORAGE OF SEALED SOURCE

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)	Not applicable		
(2)			
(3)			
(4)			

## 10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A	MANUFACTURER'S NAME B	MODEL NUMBER C	NUMBER AVAILABLE D	RADIATION DETECTED (alpha, beta, gamma, neutron) E	SENSITIVITY RANGE (milliroentgens/hour or counts/minute) F
(1)	See attachment					
(2)						
(3)						
(4)						

## 11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

<input type="checkbox"/> a. CALIBRATED BY SERVICE COMPANY NAME, ADDRESS, AND FREQUENCY  See Attachment	<input type="checkbox"/> b. CALIBRATED BY APPLICANT Attach a separate sheet describing method, frequency and standards used for calibrating instruments.
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## 12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A	SUPPLIER (Service Company) B	EXCHANGE FREQUENCY C
<input type="checkbox"/> (1) FILM BADGE <input checked="" type="checkbox"/> (2) THERMOLUMINESCENCE DOSIMETER (TLD) <input type="checkbox"/> (3) OTHER (Specify): _____  	Teledyne Isotopes Westwood Laboratories 50 Van Buren Avenue Westwood, New Jersey 07675	<input checked="" type="checkbox"/> MONTHLY <input type="checkbox"/> QUARTERLY <input type="checkbox"/> OTHER (Specify): _____  

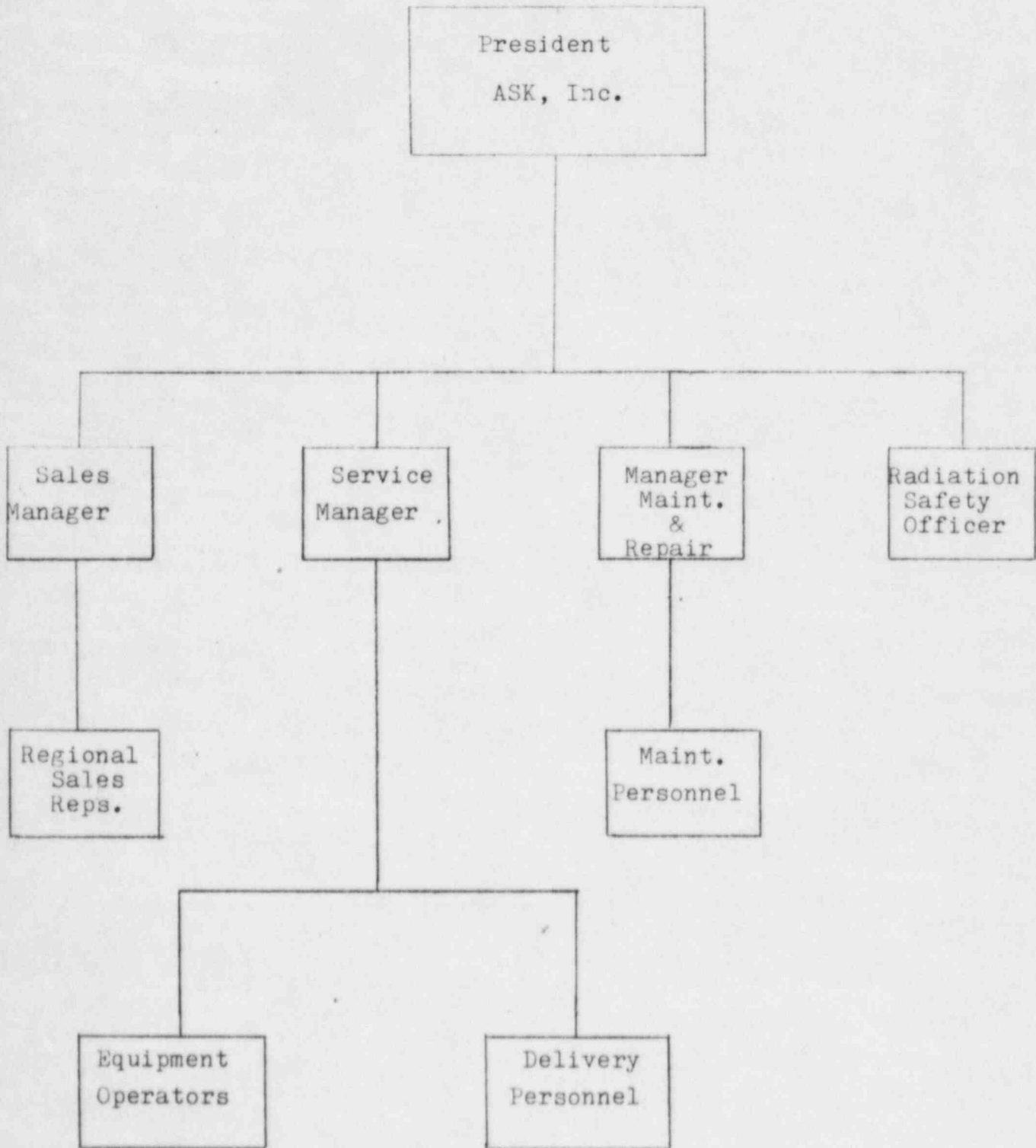
## 13. FACILITIES AND EQUIPMENT (Check where appropriate and attach annotated sketch(es) and description(s).)

- ☒ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC.  
☐ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.  
☐ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.  
☐ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC.

## 14. WASTE DISPOSAL

- a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED  
See attachment
- b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE.

Table of Organization, ASK, Inc.





### Sample Test Questions

1. The type of radiation that has the least penetrating power and is primarily an internal hazard is:
  - A. Beta
  - B. Gamma
  - C. Alpha
  - D. Neutron
2. Your TLD should be worn
  - A. In your pants pocket so you will not lose it.
  - B. On a band around your arm.
  - C. Anytime you are on the premises of ASK, Inc.
  - D. On your chest when you enter the restricted area.
3. If you find yourself contaminated you should
  - A. Go and get help
  - B. Step back into the area you just exited.
  - C. Clean it yourself and don't mention it to anyone.
  - D. Stand fast and call for assistance
4. To minimize your exposure you should take advantage of:
  - A. Time, length, and height
  - B. Time, distance, Shielding
  - C. Breaks, shielding, distance
  - D. TLD's, protective clothing, step-off pads

## ATTACHMENT

### Item 7 Continued: Education

June 1968	Graduate Brentwood High School Brentwood, NY.
Oct. 1970-	Graduate of Naval Nuclear Power Training Program
Oct. 1972	including: Basic Propulsion Engineering Machinist Mate "A" Basic Nuclear Power School D1G Prototype Engineering Laboratory Technician
Aug. 1975	Sub-safe Certification (Quality Assurance)
Jan. 1982	A.A.S. in Business Administration from Mohawk Valley Community College, Utica NY.

### Memberships

Health Physics Society  
American Nuclear Society

### Certification

Certified by National Registry of Radiation  
Protection Technologists-Janurary 1977

### Isotopes Worked With

Have worked with all isotopes normally found at a nuclear reactor facility. Activities varied from micro-curies to curies. Laundry facilities were licensed to possess up to one (1) curie as contamination on protective clothing and equipment. During normal operations approximately 100-200 millicuries would be on site at any given time. Maximum radiation levels were 75 mr/hr per container, with internal<sub>2</sub> contamination levels exceeding 200,000 DPM/100 cm<sup>2</sup>.

While working at various reactor sites, worked with contamination levels exceeding 1,000,000 DPM/100 cm<sup>2</sup> and radiation levels exceeding 10 R/hr.

ATTACHMENT

Item 8: Licensed Material

This is an application for a "Type B specific license of broad scope".

Item 8A: Element and Mass Number

Any byproduct, source, or special nuclear material with Atomic Numbers 1-96

Item 8B: Chemical and/or Physical Form

Fixed and removable contamination on equipment and components.

Item 8C: Name of Manufacturer and Model Number

Not applicable

Item 8D: Maximum Number of Millicuries and/or Sealed Sources and Maximum Activity per Source Which Will be Possessed at any one Time.

No component or piece of equipment shall exceed 50 mr/hr at one inch as measured with a Geiger Mueller detector with a maximum window thickness of 7 mg/cm<sup>2</sup>.

Item 8E: Describe Use of Licensed Material

ASK, Inc. provides a variety of services to the nuclear industry. These include, but are not limited to, rental of various types of decontamination equipment (HEPA filtered vacuums, high pressure washers, tool cleaning machines, etc.), repairing and refurbishing of various pieces of customer owned equipment, and area decontamination services.

Although this equipment has been designed to facilitate decontamination, there will be a certain amount of fixed and loose contamination that will remain internal to the equipment.

The principle use of licensed material will be the receipt, storage, and refurbishment of this equipment.

ATTACHMENT

Item 10: Radiation Detection Instruments

1. Survey Instruments - Johnson Model GSM-15 meter with a Geiger Mueller detector having a maximum window thickness of 7 mg/cm<sup>2</sup>. Will detect Beta and gamma radiation in the range of 0-200 mr/hr.

2. Frisker

Johnson Model RML-2 meter with a 2" diameter thin window Geiger Mueller detector (pancake tube). Will detect beta and gamma radiation in the range of 0 - 50,000CPM.

3. Scaler

Johnson Model LS-5A with a Johnson Model MSC-2 manual sample changer. This instrument will be used with a thin window Geiger Mueller detector or an alpha scintillation probe (Johnson Model ASP-2A) for contamination and airborne activity surveys.

4. Air Sampler

Eberline Model RAS-1

Equivalent instrumentation may be substituted at our option.

ATTACHMENT

Item 14: Waste Disposal

All radioactive waste will be packaged, surveyed, and labeled in accordance with all applicable regulations (NRC, DOT, burial site, etc.) and disposed of by transfer to a person licensed to receive such material. The company currently scheduled to receive this waste is:

Teledyne Isotopes  
50 Van Buren Ave.  
Westwood, NJ 07675



ATTACHMENT

3.2.1.A. The minimum number of hours shall depend on the individual's job classification and shall conform to the following:

1. Persons authorized to supervise job tasks - 40 hours training
2. Workers - 8 hours training
3. Persons with previous training at other facilities may be permitted to take only the site specific portion of the training. In this case the minimum number of hours is reduced to two. However the requirement of section 3.2.4 still must be completed. (Previous training and experience must be verified by contacting previous employers and/or schools)

3.2.2 The training program shall consist of the following:

- a. Sources of Radiation Exposure
- b. Nature and Properties of Radiation
- c. Biological Effects of Radiation
- d. Quantities and Units of Radiation
- e. Procedures and Procedural Compliance
- f. Exposure Control and Limits
- g. ALARA
- h. Control of Radioactive Material
- i. Protective Clothing
- j. Emergency Procedures
- k. 10CFR19
- l. Prenatal Exposure (Regulatory Guide 8.13)

## ATTACHMENT

- 3.2.3 The responsibility for the development and implementation of the training program lies with the Radiation Safety Officer. It should be flexible enough to take into consideration the individual's background, previous training, and the task to be performed.
- 3.2.4 Successful completion of a written examination is required prior to receiving unescorted access.
- 3.2.5 From time to time it may be necessary for an individual who has not received the appropriate training to have access to a controlled area. The training requirement may be waived at the discretion of the Radiation Safety Officer provided a qualified escort is provided for the individual. This waiver applies to observers only. Any person who will be performing work inside the area must comply with sections 3.1.1 through 3.2.4
- 3.2.6 It is the responsibility of the escort to maintain full control over the movements and activities of this individual during the period he is in a controlled area. The escort will insure that all procedures and regulations are complied with.

## 4.0 Exposure Control

This section provides the specific guidance necessary to keep exposure of all personnel as low as reasonably achievable.(ALARA)

### 4.1 Definitions

- 4.1.1 Restricted Area- a restricted area is any area to which access is controlled for purposes of protection of individuals from exposure to radiation and radioactive materials. Restricted areas shall not include any areas used as residential quarters, although a separate room or rooms in a residential building may

ATTACHMENT

- 4.3.1 Continued  
barrier such as gate or door to prevent the access of unauthorized persons.

Access to the controlled area will be through an established control point. There shall be no restricted or controlled areas outside of the facility except on a temporary basis as authorized by the Radiation Safety Officer provided such areas incorporate a suitable physical barrier such as a fence or door.

All routine work shall be performed in a separate room from any work that does not involve licensed material.

4.3.2 Entry and Exit Requirements

A. Controlled Area

No person shall enter the controlled area unless the entry is necessary and for a specific purpose.

Each person entering the controlled area shall have completed the necessary training.

Each person entering the controlled area shall be wearing their personally issued TLD.

All persons will adhere to all procedures affecting their task and follow good health physics practices.

Each area shall have an access list at its entrance that shall specifically identify all persons authorized to enter the area.

B. Radiation Areas

Since all radiation areas will be located inside of controlled areas, access to radiation areas will be controlled by controlling access to the controlled area.

Since radiation areas may exist at various locations inside the controlled area and frequently changing due to incoming and outgoing equipment, if any radiation area exists inside the controlled area itself will be posted as a radiation area.

ATTACHMENT

4.3.2.C. High Radiation Areas

The entrance to the high radiation areas shall be equipped with devices such as doors which shall remain locked except:

1. Areas which cannot be locked will be guarded until such time as they can be locked.
2. Areas in which personnel are present shall not be locked but a guard shall be present at the entrance to prevent the unauthorized entry of personnel. He shall have in his possession a list of persons authorized, by the Radiation Safety Officer, to enter the area.

All persons entering the high radiation area shall have in their possession, in addition to their TLD, a self-reading dosimeter (0 - 200MR range) and a radiation dose rate measuring device with a range suitable to measure the expected dose rates.

All keys to high radiation areas shall be controlled by the Radiation Safety Officer.

## ATTACHMENT

### 4.4 Personnel Monitoring

- 4.4.1 The personnel monitoring program at ASK, INC., shall be conducted in a manner that is consistent with title 10, Code of Federal Regulations Part 20. The program shall consist of both thermoluminescent dosimeters (TLDs) and self-reading pocket dosimeters. The permanent record shall be provided by the TLD. The self-reading pocket dosimeter shall be used to give estimates of exposure between reading of the TLD and to augment and verify the TLD reading.
- 4.4.2 Dose information from sources other than the TLD may be used to replace or supplement the TLD results. This may be necessary in the event that the TLD is lost or damaged, the results are suspect, etc. In these cases the action taken and its justification shall be documented in accordance with good health physics practices.
- 4.4.3 All individuals entering the restricted area of ASK, INC., are required to have in their possession a personal monitoring device capable of measuring exposure to ionizing radiation. Whenever licensed materials are contained in the maintenance area, the boundary walls of the facility shall be the boundary of the restricted area.
- 4.4.4 Personnel monitoring equipment shall be issued to and worn by :
  - A. Each individual who enters a restricted area under such circumstances that he receives, or is likely to receive a dose in any calendar quarter in excess of 25% of the applicable value specified in 4.6.2A.
  - B. Each individual, under the age of 18 years, who enters a restricted area under such circum-



## ATTACHMENT

4.4.10 All TLDs shall be sent for processing on a monthly basis as a minimum. More frequent processing may be necessary at the discretion of the Radiation Safety Officer. Situations which might necessitate more frequent processing would include:

- A. An individual is approaching or is suspected of having reached the maximum permissible administrative limit for exposure.
- B. An individual's dosimeter is off-scale or lost. (The results of an investigation would determine if processing was necessary.)

4.4.11 The use of self-reading pocket dosimeters shall conform to the following:

- A. It shall be worn adjacent to the TLD.
- B. On the initial entry of the day the dosimeter shall read less than 20 mr.
- C. It shall be read frequently when the individual is in a controlled area. The frequency should be consistent with the levels of radiation present.
- D. It shall be re-zeroed when it reaches 75% of full scale. The accumulated dose shall be recorded prior to re-zeroing the dosimeter.
- E. If it reads off-scale or is lost, the individual shall immediately leave the controlled area and report the problem to radiation protection personnel.

4.4.12 The exposure records shall be maintained current and shall be retained until their disposal is authorized by the NRC. Reports of exposure, to individuals and regulatory agencies, shall be provided in accordance with Title 10 Code of Federal Regulations, Parts 19 and 20.

ATTACHMENT

4.5 Bioassay Program

4.5.1 In order to insure that individuals are not ingesting excessive quantities of radioactive materials, the following procedures shall be followed:

- A. Prior to the employment of individuals in the controlled areas, a whole body count shall be performed. This will serve as a baseline and control for comparison with any future samples.
- B. Any person who is discovered to have contamination on his person in excess of 10,000 DPM/100 cm<sup>2</sup> shall have a whole body count performed to detect any internal contamination.
- C. Any person who is discovered to have contamination in excess of 1000 DPM/100 cm<sup>2</sup> on his facial area shall have a whole body count performed.
- D. More frequent whole body counts may be required in certain instances, at the discretion of the Radiation Safety Officer.
- E. The whole body counts shall be performed by an organization such as:

Radiation Management Corp.  
Science Center Bldg. 2  
Philadelphia, PA 19101

## ATTACHMENT

### 4.6 Exposure Limits

4.6.1 All persons working within the restricted area of ASK, INC., shall be subject to the maximum permissible exposures as specified in title 10 Code Of Federal regulations Part 20. This regulation specifies the maximum permissible exposure; all individuals should strive to maintain their exposure as low as reasonably achievable.(ALARA)

4.6.2 The occupational exposure limits for personnel 18 years of age and over are as follows:

#### A. REMS per Calendar Quarter

- |   |       |
|---|-------|
| 1. Whole body, head and trunk, active blood forming organs, lens of eye, or gonads. | 1.25  |
| 2. Hands and forearms, feet and ankles.   | 18.75 |
| 3. Skin of whole body.  | 7.5   |

B. An individual in a restricted area may receive a total occupational dose to the whole body greater than that specified in 4.6.2A provided:

1. During any occupational quarter the total occupational dose to the whole body shall not exceed 3 REMs; and
2. The dose to whole body, when added to the accumulated occupational dose to the whole body, shall not exceed  $5(N-18)$  REM where "N" equals the age in years at his last birthday; and

ATTACHMENT

4.7.3C continued

1. The individual's TLD shall be processed and the results evaluated prior to granting this extension. This extension will allow the worker to receive up to 2000 MREM for the quarter. The worker's TLD shall be processed at a frequency selected by the Radiation Safety Officer to insure the individual does not exceed the upper limits. This section applies only if the individual has sufficient remaining exposure using 5(N-18).

- 1) No individual working in the ASK, INC., facility will be allowed to exceed 2000 MREM per quarter.

- 4.7.4 Any individual who receives an occupational exposure of more than 1000 MREM in any calendar quarter of the calendar year shall be limited to 750 MREM per quarter for each remaining quarter in the calendar year.
- 4.7.5 Any individual who was 18 years of age on his last birthday shall have an administrative limit of 750 MREM per calendar quarter.
- 4.7.6 Persons under 18 years of age will not be permitted routine access to the restricted area. In the event a situation arises such that a minor does require access to the restricted area the administrative limit shall be 75 MREM per quarter.
- 4.7.7 In accordance with the recommendations of the NRC, NCRP and the ICRP concerning the radiation dose received by pregnant women, the administrative dose limit at ASK, INC., is 500 MREM during the entire gestation period. This limit is based on the concern for reducing the radiation exposure to the fetus, which is particularly sensitive to radiation effects, especially during the first trimester. While the dose limit during pregnancy is 500 MREM, it should be understood that radiation dose is to be maintained as low as reasonably achievable within this limit. Instructions to all female employees, their supervisors and their co-workers will be provided in the training program as specified in Section 3.

ATTACHMENT

4.8 This section deleted

4.9 ALARA

- 4.9.1 It is of prime importance that the use of radioactive materials at ASK, INC., be conducted in a manner, that unnecessary and inadvertent exposures are eliminated to the maximum extent possible and that all exposures are kept as low as reasonably achievable. (ALARA)
- 4.9.2 The authority, and ultimately the responsibility the responsibility, for the implementation of the ALARA program rests with the President with ASK, INC. This individual shall insure that all persons, both management and workers, understand and comply with the principle of ALARA.
- 4.9.3 Reporting directly to the President, the Radiation Safety Officer shall be responsible for implementing the plan on a day to day basis.
- 4.9.4 The implementation of the ALARA program shall include, as a minimum; 1) Instilling in all employees a belief and understanding of ALARA ; 2) Review of all work procedures, prior to the commencement of work, to insure that the principle of ALARA was taken into consideration; 3) Periodic inspections of jobs to



4.9.4 continued

insure work is being performed in a manner that maintains exposures ALARA.

A. Instilling a belief and understanding of ALARA in all employees is accomplished by utilizing the following steps:

1. Training- During initial training all employees are made familiar with the principle of ALARA and with the importance of exposure reduction efforts both on a company-wide basis and on a personal basis.
2. Worker Input- All personnel are encouraged to recommend changes and improvements in procedures, work habits and equipment that will result in reduction of exposure.
3. Procedural Compliance- All personnel shall comply with work procedures and shall implement all exposure reduction techniques instituted by radiation protection personnel.

B. Prior to obtaining approval for a use or user of licensed material the work procedures for the task must be approved by the Radiation Safety Officer. As a part of this review, the Radiation Safety Officer shall examine the procedure for compliance with the principle of ALARA. This review shall include, but not necessarily be limited to, the following:

1. The use of temporary shielding. The estimated exposure to install and remove the shielding should be weighed against the exposure reduction anticipated.
2. Changing the job location to an area with lower radiation levels.
3. Reduce radiation levels by removing nearby hot spots. (relocate portable equipment, flush piping, etc.)
4. Conduct mock-up training .
5. Holding pre-work briefings. These should detail any potential problems, higher radiation areas, changes in work conditions since the job was performed last.
6. Changing the size of the work crew. Keep excess and relief personnel in an area of lower radiation levels.

## ATTACHMENT

### 4.9.4B continued

7. Decontamination- By decontaminating areas and equipment, it will not only reduce exposures but will also minimize the potential for personnel contamination and the production of airborne radioactivity.
8. The use of tents, glove boxes, etc. should be maximized whenever possible.
- C. The radiation protection staff, including the Radiation Safety Officer shall perform periodic unannounced inspections of work sites. These inspections are for the purpose of insuring compliance with both work procedures and good health physics practices as well as determining if work is proceeding in a manner consistent with ALARA. This determination will be based on those requirements that were placed on the job before work commenced as well as any new observations made. If any new techniques are discovered that will help to reduce exposures they shall be implemented as soon as possible.

## 5.0 Contamination Control

### 5.1 General

- 5.1.1 Surface contamination can exist in one of two forms; loose (or removable) contamination or fixed contamination. Loose contamination is generally defined as material which can be removed by swiping the surface with a dry, absorbant material using moderate pressure. Quite often surface contamination will have a combination of loose and fixed contamination. Fixed contamination is that portion of surface contamination which is not easily removed in the manner described above.
- 5.1.2 Since removable contamination is more readily dispersed than fixed contamination the limits for contamination permitted in uncontrolled areas differentiates between the two forms, with loose contamination having the more restrictive limit.
- 5.1.3 The objectives of the contamination control program at ASK, INC., are threefold:
  - A. To minimize the possible spread and release of radioactive material to uncontrolled areas or to the surrounding environment.
  - B. To minimize the possible ingestion or inhalation of radioactive material by individuals coming in contact with contaminated surfaces.

ATTACHMENT

5.3.2 continued

Access control points shall be established within the following general guidelines.

- A. The control points should be located as close to the contaminated area as possible.
- B. The control point should be located in an area with background radiation levels as low as possible.
- C. It should be large enough to handle the expected amount of traffic.
- D. The entrance should be roped off and posted as a contaminated area.
- E. Appropriate receptacles should be provided for the handling of used protective clothing and radioactive waste.
- F. The proper procedure for exiting across a step-off area is as follows:
  - 1. Before stepping across the first boundary the following items shall be removed:
    - Outer shoe covers
    - Outer gloves
    - Hood
    - Coveralls/Lab coat
    - Respirator (if worn)
  - As the person steps across the boundary the inner shoe covers shall be removed in such a manner that only the clean feet touch the floor inside the boundary. (This will be demonstrated and practiced during training.)
  - 2. In the center section of the step off area, the inner gloves are removed and the person performs a whole body frisk.
  - 3. As the person steps into the clean area the feet (including bottoms) are frisked prior to touching the clean area.

## ATTACHMENT

### 5.3.2 continued

G. The proper procedure for frisking is as follows:

1. Pass hands under the probe prior to picking it up. Check both sides of your hand.
2. Slowly (maximum 2 inches/second) pass the probe over your body at a distance of approximately  $\frac{1}{2}$ ". Insure all areas are checked including face, hair and back.
3. When all sections of your body have been checked and you are ready to exit the area, check each foot before placing it on the clean side of the area.
4. If at any time you obtain a reading in excess of 100 CPM above background, do not exit the area and contact radiation protection for assistance.

5.3.3 No individual shall enter a contaminated area unless his assigned task specifically requires it.

5.5.4 All individuals entering a contaminated area shall comply with all procedures that have been established for working in that area.

### 5.4 Control Measures

5.4.1 There are certain control measures that shall be taken to minimize, to the maximum extent possible, the contamination of areas, equipment and personnel. These measures include, but are not limited to:

- A. Training of all personnel in techniques to minimize the release and spread of contamination.
- B. Training of personnel in the proper use of protective clothing and equipment as well as the proper techniques for monitoring for personnel contamination.
- C. Preplanning of work involving contamination to carefully consider the use of contamination containment devices such as glove boxes, tents, etc in order to avoid the release and spread of contamination.
- D. Increasing the frequency of contamination surveys during heavy work load periods to promptly detect any releases or spread of contamination.



## ATTACHMENT

- 5.5.4 Each individual prior to entering a contaminated area shall be responsible to determine from the appropriate procedure, what items of protective clothing are required.
- 5.5.5 Prior to donning the protective clothing each item shall be inspected to insure that it is not damaged. Damaged items shall be removed from service.
- 5.5.6 If disposable garmets are being used they shall be disposed of as radioactive waste after each use.
- 5.5.7 If reusable garmets are used each garmet shall be laundered prior to re-use, by a licensed nuclear laundry.
- 5.5.8 After being laundered each garmet shall be individually surveyed prior to being accepted for re-use.
  - A. If the garmet has less than 1000DPM/cm<sup>2</sup> loose contamination and less than 0.25MR/hr at 1 inch fixed contamination it is suitable for re-use.
  - B. Garmets with fixed contamination greater than 0.25MR/hr at 1 inch but less than 1.0MR/hr at 1 inch may be used in the outer set of garmets when more than one set of PCs are required.
  - C. Garmets with fixed contamination in excess of 1.0MR/hr at 1 inch shall be disposed of as radioactive waste.

## 5.6 Personnel Contamination Control

- 5.6.1 All persons exiting in a contaminated area shall remove all protective clothing, following the correct procedures, prior to entering a clean area.
  - 5.6.2 A self frisking station shall be set up as close to the control point as background radiation levels will permit. All personnel shall perform a whole body frisk at the closest frisking station. In no event shall an individual exit the controlled area without performing a whole body frisk.
  - 5.6.3 The Radiation Protection Staff shall be notified if any individual is found to be contaminated in excess of the following:
    - A. Beta-Gamma Contamination 1000DPM/100cm<sup>2</sup>
    - B. Alpha Contamination 100DPM/100cm<sup>2</sup>
- A 1000DPM/100cm<sup>2</sup> reading is present when a reading

## ATTACHMENT

### 5.6.3 continued

of 100Cpm is received when using an HP-210 probe, or equivalent, at  $\frac{1}{2}$  inch. Personnel monitoring for alpha contamination is not normally performed unless the individual is in a area known to have alpha contamination present. This can be justified by checking routine smear surveys for alpha contamination. If alpha monitoring is to be performed, it shall be done using an alpha scintillation probe such as a Johnson ASP-2A or equivalent.

- 5.6.4 If contamination, in excess of 100 CPM when measured as above, is found on the facial areas in the vicinity of the mouth and nose, nasal swabs shall be taken and analyzed to determine the possibility of internal contamination. If contamination is found on the nasal smear a bioassay sampling program shall be initiated.

### 5.7 Tools & Equipment Contamination Control

- 5.7.1 All tools, equipment and other material shall be surveyed for contamination prior to being released to a clean area.

- 5.7.2 The following limits must be met before any item is given an unconditional release for use in uncontrolled areas:

- A. Loose Beta-Gamma Contamination- less than 1000DPM/100cm<sup>2</sup>
- B. Loose Alpha Contamination- less than 100 DPM/100cm<sup>2</sup>
- C. Fixed Beta-Gamma Contamination- less than 0.1mr/hr@ 1cm

- 5.7.3 Tools and equipment routinely used in contaminated areas do not require decontamination provided the item is plainly marked or is painted yellow and is used and stored in a contaminated area. These tools however will require decontamination if they are to be taken into a clean area.

- 5.7.4 All decontamination shall be performed in accordance with good health physics practices.

### 5.8 Surveys

- 5.8.1 All contamination surveys shall be performed in accordance with section 7.3

### 6.0 Control of Airborne Radioactivity

#### 6.1 General

- 6.1.1 The primary reason to control airborne radioactivity is to minimize the internal exposure of personnel from the inhalation of airborne radioactive materials.



## ATTACHMENT

### 7.3.6 continued

- B. Daily on the clean side of the access control point when work involving the use of licensed material is being performed in the controlled area.
- C. Weekly in any area in which licensed material is being stored but no work is being performed.
- D. Monthly in all areas adjacent to the restricted area.
- E. No surveys shall be required during those periods in which no licensed material is being stored or used in the facility.

7.3.7 All instruments used to measure surface contamination must be sensitive enough to detect the levels specified in 5.2.1 if the data is to be used for releasing an area or equipment or to determine if protective clothing is necessary. The minimum detectable activity of the instrument shall be no higher than 50% of the applicable release limit. Efficiencies and MDAs shall have been calculated within 24 hours of the count being performed.

7.3.8 The frequency, number and detail of specific job and routine surveys may be varied at the discretion of the Radiation Safety Officer.

### 7.4 Airborne Radioactivity Surveys

7.4.1 The purpose of the airborne radioactivity sampling program at ASK, Inc., is to monitor and document the exposure of individuals to concentrations of airborne radioactive material. It also provides the data necessary to evaluate the protective measures taken (ventillation systems, containment devices, etc.) and to determine if postings are necessary.

7.4.2 Air samples, to the maximum extent possible, shall be representative of the air in the workers breathing zone. General air samples may also be required at the discretion of radiation protection personnel.

7.4.3 Due to the varied nature of each task, the air sampling program for each job shall be specified in the work procedures for that job.

## ATTACHMENT

- 7.4.4 A general area air sample shall be performed daily in the restricted area whenever any work involving licensed material is being performed.

Whenever an air sample is taken in a restricted area, one will also be taken in the adjoining unrestricted area.

- 7.4.5 Airborne contamination shall be determined by taking an air sample filter paper, through which a known volume of air has been drawn, and measuring the amount of radioactivity present, using a properly calibrated instrument. The sensitivity of the instrument shall be sufficient to insure that the limits of section 6.2 are not being exceeded.

- 7.4.6 The air sampler being used (RAS-1 or equivalent) shall have been calibrated within the previous six (6) months. The filter paper being used shall have a known collection efficiency. The filter paper is then counted using a scaler that has had an efficiency and minimum detectable activity calculated within the previous 24 hours. The airborne activity shall be calculated using the collection efficiency, detector efficiency, and volume of air sampled.

### 7.5 Job Specific Surveys

- 7.5.1 The survey requirements for each specific job shall be contained in the work procedures.

- 7.5.2 These requirements shall include the frequency and type of surveys to be performed. The following items should be taken into consideration when determining survey requirements:

A. Pre-work surveys to determine what protective measures, equipment, and clothing are needed.

B. The potential for the creation of airborne contamination.

C. Contamination levels of the equipment involved.

D. The potential for significant changes in the radiological conditions occurring.

E. Radiation levels in the work area.

F. Post-work surveys to determine radiological conditions after work has been completed in order to determine what, if any, requirements (decontamination, posting, etc) should be placed on the area.

## ATTACHMENT

### 7.6 Qualifications

- 7.6.1 All personnel performing surveys, either routine or job specific, shall have received instruction in this area and will be authorized by the Radiation Safety Officer.

### 8.0 Control and Accountability of Radioactive Material

#### 8.1 General

- 8.1.1 The control of radioactivity material at ASK, INC., plays an important part in keeping exposure to individuals as low as reasonably achievable.
- 8.1.2 Radioactive material at ASK, INC., will normally be in the form of contamination on equipment coming from customer sites.
- 8.1.3 Some radioactive material may be generated at ASK, by the transferring of contamination from one piece of equipment to others. This material will normally be in the form of waste or tools. It is important, therefore, to maintain an accountability system for all radioactive material at the facility.
- 8.1.4 The control and accountability of radioactive material at ASK is accomplished through the use of various techniques which may include:
- A. Access Control
  - B. Surveys & Documentation of incoming and outgoing material.
  - C. Inventories
  - D. Labeling & marking
  - E. Proper waste disposal
  - F. Storage requirements
  - G. Procedural compliance
- 8.1.4.1 The inventory program shall consist of, as a minimum, the following:
- a. Whenever a radioactive materials shipment is received, the contents shall be checked and the following information recorded:
    - Type of equipment
    - Curie content (or sub-multiple)
    - Serial number
    - Location stored
  - b. Whenever a radioactive materials shipment is sent out the same records shall be updated to show the new location and the corresponding decrease in the amount of radioactive material on hand.
  - c. Records shall be kept indicating the amount of activity contained in waste, and the

## ATTACHMENT

### 8.1.4.1 continued

quantities disposed of either by transfer or by release into the sanitary sewer system.

## 8.2 Definitions

- 8.2.1 Radioactive Material Area-1. Any area or room in which licensed material is used or stored and which contains any radioactive material (other than natural uranium or thorium) in an amount exceeding 10 times the quantity of such material specified in 10CFR20 Appendix C. or 2. Any area or room in which natural uranium or thorium is used or stored in any amount exceeding one hundred times the quantity specified in 10CFR20 Appendix C.

## 8.3 Postings and Labeling

- 8.3.1 All radioactive materials areas shall be posted with a sign or signs bearing the radiation caution symbol and the words:  
CAUTION RADIOACTIVE MATERIAL(S)  
unless they meet the requirement of 10CFR20 section 20.204.

- 8.3.2 Each container of licensed material shall bear a durable, clearly visible label identifying the radioactive contents. The label shall bear the radiation caution symbol and the words, "CAUTION, RADIOACTIVE MATERIAL". It shall also provide sufficient information to permit individuals handling or using the containers, or working in the vicinity thereof, to take precautions to avoid or minimize exposures.

A. This information may include such items as:

1. Radiation levels
2. Types of material
3. Estimates of activity
4. Isotopes present



## ATTACHMENT

### 8.3.2 continued

B: Labeling of the containers is not required if:

1. The container does not contain licensed material in quantities greater than the applicable quantities listed in 10CFR20 Appendix C.
2. The container does not contain licensed material greater than the applicable concentrations listed in 10CFR20 Appendix B Table I, Column 2.
3. The container is packaged and labeled for transport in accordance with the regulations of the Department of Transportation.
4. The container meets any of the other requirements as specified in 10CFR20 section 20.203.F.3.

8.3.3 Prior to disposing of an empty uncontaminated container to unrestricted areas, all radioactive material labels shall be removed or defaced or the container shall clearly indicate that it no longer contains radioactive materials.

### 8.4 Receipt of Radioactive Materials

8.4.1 All incoming packages that contain licensed material shall be surveyed for radiation levels and contamination levels on receipt.

8.4.2 No package shall be accepted if the results of these surveys exceed the following:

- A. 50mr/hr at one inch as measured with a Geiger-Mueller detector with a maximum window thickness of 7 mg/cm<sup>2</sup>
- B. 1000 DPM/100 cm<sup>2</sup> of loose contamination on the external surfaces of the package.
- C. If these limits are exceeded, radiation protection personnel shall be notified immediately.

8.4.3 A copy of these instructions shall be maintained at all times at the receiving dock.



## ATTACHMENT

### 8.5 Radioactive Material Storage

- 8.5.1 All radioactive material shall be stored in designated locations within the restricted area.
- 8.5.2 Access to these materials shall be controlled to prevent their unauthorized use or removal. The level of security of each storage location shall be commensurate with the type and quantity of licensed material inside.

### 8.6 Radioactive Material Accountability

- 8.6.1 It is a necessary part of any program to insure that licensed material is not lost, stolen, used or transferred incorrectly. This is accomplished at ASK by the following:
  - A. The use of all radioactive material is under the control of the Radiation Safety Officer. This is accomplished by keeping the facility locked and issuing keys to authorized personnel only.
  - B. All incoming and outgoing shipments of radioactive material are properly documented and an inventory is maintained showing the quantity of licensed material currently at the facility.
  - C. An inventory control system shall be established for licensed sources to maintain control of these sources.

### 8.7 Transfer of Radioactive Material

- 8.7.1 Prior to the transfer of radioactive material to another company or individual, a copy of their radioactive materials license shall be on file.
- 8.7.2 The receiving facility will be notified of the shipment prior to its leaving ASK, Inc.
- 8.7.3 The shipment shall comply with all applicable regulations (U.S. Postal Service, 10CFR, 49CFR, etc.).
- 8.7.4 All shipping papers, including surveys, shall be maintained on file.
- 8.7.5 Shipping papers shall be signed by the Radiation Safety Officer or an individual designated by him. The transfer of licensed material could occur for one of several reasons:
  - A. Transfer of waste to a licensed facility.
  - B. Transfer of equipment that has some internal contamination to or from a licensed facility.

## ATTACHMENT

- 9.4.2 There shall be no free standing liquid in any package that has been prepared for shipment.
  - 9.4.3 Sufficient radiation and contamination surveys shall be performed to insure compliance with all regulations.
  - 9.4.4 Any vehicle used to transport radioactive waste shall be inspected and surveyed prior to loading to insure that it is in proper condition for carrying hazardous material and is not contaminated.
  - 9.4.5 All containers shall be properly labeled and the transport vehicle properly placarded, if necessary, to insure compliance with all regulations.
  - 9.4.6 The shipment of radioactive waste shall be documented and the appropriate forms provided to all parties as required.
- 9.5 Disposal by Release into the Sanitary Sewer
- 9.5.1 The only material that is acceptable for release into the sanitary sewer is aqueous waste in which the licensed material is readily soluble or dispersible.
  - 9.5.2 Samples of the liquid being discharged shall be taken and analyzed prior to a discharge occurring. The sample shall be evaporated and counted on a scaler for gross beta-gamma activity. The scaler shall have had an efficiency and minimum detectable activity calculated within 24 hours prior to the counting of the sample.
  - 9.5.3 All discharges shall be in compliance with 10CFR20
  - 9.5.4 Records shall be maintained of all releases to the sanitary sewer system to document compliance with all applicable regulations.

## ATTACHMENT

### 10.0 Emergency Procedures

#### 10.1 General

- 10.1.1 Emergency planning for casualties and incidents involving radioactive materials is focused primarily on situations that may cause, or threatens to cause, radiological hazards affecting the health and safety of workers, or the public, or resulting in damage to property.
- 10.1.2 These procedures are directed toward mitigating the consequences of radiological casualties and incidents, and provide reasonable assurance that appropriate measures will be taken in an expeditious manner to protect the health and safety of personnel and minimize damage to property.
- 10.1.3 A list of emergency phone numbers shall be posted at various accessible locations in the building. This list shall include the home numbers of all key persons.

#### 10.2 Spill of Radioactive Material

##### 10.2.1 Immediate actions should include:

- A. Stop the spill or release of contamination.
- B. Warn other individuals in the area to stay clear.
- C. Isolate the area.
- D. Notify radiation protection personnel.
- E. Minimize the spread of contamination by all available means.

##### 10.2.2 Initiate clean-up and decontamination work following good health physics practices.

##### 10.2.3 A follow-up investigation should be performed to minimize the possibility of the incident recurring.

#### 10.3 Fire

##### 10.3.1 A fire will normally be much more of a hazard to life and property than the radioactivity, therefore, the fire fighting effectiveness should take precedence over radiological controls.

##### 10.3.2 The Radiation Safety Officer shall be notified as soon as possible.

##### 10.3.3 The fire chief should be briefed on the radiological aspects of the fire.

## Efficiency Calculation

An efficiency shall be calculated for any instrument used to count smears, air samples, or water samples. The efficiency calculation shall have been performed within 24 hours of the sample count. The procedure for performing this is as follows:

1. A source of known activity with a geometry similar to the geometry of the sample (ie. 2" disc) shall be placed in the sample holder. The position of the source will be the same as the position that is used to count the sample. (shelf 1, shelf 2, etc.)
2. The source will be counted for 5 minutes.
3. Calculate the efficiency as follows:

$$\frac{\text{Total Counts } (C_t)}{\text{Time Counted}} = \frac{\text{Counts}}{\text{Minute}} = (\text{CPM})$$

$$\text{CPM} - \text{CPM}_{\text{background}} = \frac{\text{Corrected Counts}}{\text{Minute}} = \text{C.C.}$$

$$\frac{\text{C.C.}}{\text{DPM of source}} = \% \text{ Efficiency}$$

$$\frac{1}{\% \text{ efficiency}} = \text{Efficiency Factor (E.F.)}$$

The efficiency shall be used in activity calculations as follows:

### I. Air Samples

$$\frac{C_s \times \text{E.F.} \times 4.5 \times 10^{-7}}{\text{Collection Efficiency} \times \text{Volume Sampled (ml)}} = \text{Airborne Activity } \left( \frac{\text{uCi}}{\text{ml}} \right)$$

### II. Smears

$$\frac{C_s \times \text{E.F.}}{\text{Area}} = \frac{\text{DPM}}{\text{Area}}$$

#### Notes:

$C_s$  = CPM of sample - CPM of background

E.F. = Efficiency Factor

$4.5 \times 10^{-7}$  = conversion from DPM<sub>2</sub> to uCi

Area = Standard area is 100 cm<sup>2</sup>

DPM = Disintegrations per minute

## General Decon Procedure

The majority of the decon operations shall normally be performed at the customers facility. This includes removal and disposal of all bags, pre-filters, and HEPA filters. The equipment shall also have no external contamination in excess of 1000 DPM/100 cm<sup>2</sup>. The internals of all easily accessed components shall also have been decontaminated to the maximum extent possible (These components include all tanks, water shut-offs, and any other component that would not require disassembly of the unit to access it.). Since this preliminary decon will remove the vast majority of contamination, most equipment sent to ASK, Inc. will have contact dose rates of 5 mr/Hr or less.

In order to perform work on these units the work must be performed in a controlled area following good health physics practices (as specified in the RWP covering the job).

Any piece of equipment reading in excess of 5 mr/hr will be disassembled and worked on only when inside a tent maintained at a negative pressure.

The first step after the initial disassembly of the unit into its major components will be to perform a smear survey to establish contamination levels. Any component with contamination levels in excess of 100,000 DPM/100 cm<sup>2</sup> shall be worked on only when inside a glove box or a tent. When the item is not being worked on, it shall be stored inside a sealed container (4 mil poly bag, steel drum, etc.).

All components shall be deconned to the greatest extent possible prior to commencing work on them. Since most surfaces are smooth finished stainless steel, decon will consist mainly of wiping with a decon agent such as NUTEK 600EL or Radiacwash.

Preliminary decon on the motor windings shall consist of vacuuming with a HEPA filtered vacuum cleaner. If radiation and/or contamination surveys indicate significant contamination remains (Greater than .5 mr/hr or 10,000 DPM/100 cm<sup>2</sup>) in the motor, additional steps shall be taken if the motor is to be re-used. This will include cleaning with equipment such as a high pressure freon tool cleaning machine.

If the motor itself is reading greater than 10 mr/hr or has loose contamination in excess of 500,000 DPM/100 cm<sup>2</sup> no attempt shall be made to decontaminate or re-use it and it shall be disposed of as radioactive waste. Any other component which has an initial contamination level exceeding 1,000,000 DPM/100cm<sup>2</sup> or which cannot be deconned to less than 10 mr/hr shall also be disposed of as radioactive waste.



All vacuum accessories such as hoses and other attachments shall remain the property of the customer and not normally be transferred to ASK, Inc.. In the event such items are received by ASK, Inc. no attempt will be made to decontaminate them with the exception of wiping down the external surfaces. These items will be returned to the customer or disposed of as radioactive waste.

This procedure is designed to provide general guidelines only. More specific work procedures shall be contained in the job procedures and the Radiation Work Permit (RWP).

## CONVERSATION RECORD

TIME

DATE

1-23-85

TYPE

☐ VISIT☐ CONFERENCE☒ TELEPHONE☐ INCOMING☐ OUTGOING

ROUTING

NAME/SYMBOL INT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT  
WITH YOU

Martin Bourquin

ORGANIZATION (Office, dept., bureau,  
etc.)

ASK Inc

TELEPHONE NO.

215-948  
9696

SUBJECT

Application for New License

SUMMARY

Due to the fact that there were many deficiencies associated with the application, I requested Mr Bourquin to come into RI for a conference to discuss the application. He stated that he was on the road and would call me on Monday (1-28-85) to set up the meeting.

1/29 Mr Bourquin will come in for a meeting on 1/30/85 to discuss ASK Application.

"OFFICIAL RECORD COPY" ML10

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION

Jack Davis

SIGNATURE

Jack Davis

DATE

1/23/85

ACTION TAKEN

SIGNATURE

TITLE

DATE

BETWEEN: William O. Miller, Chief  
License Fee Management Branch  
Office of Administration

John E. Glenn, Chief  
Nuclear Materials Section B  
Division of Engineering and  
Technical Programs

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED

Applicant/Licensee: ASK, Incorporated

Application Dated: 11/30/84

Control No.: 03333

License No.: New

2. FEE ATTACHED

Amount: \$430.00

Check No.: 16935

3. COMMENTS

Signed Brenda Planchet

Date 1/16/85

B. LICENSE FEE MANAGEMENT BRANCH

1. Fee Category and Amount: 3N \$930

2. Correct Fee Paid. Application may be processed for:

Amendment                     

Renewal                     

License                     ✓                    

Signed Frances Brown

Date 1/23/85

bg  
1/24/85  
LMS  
W

"SECTION COPY"



INC.

135 WALNUT STREET  
POTTSTOWN, PA. 19464

DATE	INVOICE	AMOUNT
	Application for new license	

3-76 30  
310

16935

PAY Nine Hundred Twenty and 00/100 DOLLARS

CHECK NO.	DATE	TO THE ORDER OF	GROSS AMOUNT		DISCOUNT	CHECK AMOUNT
			OTHER	ACCTS PAYABLE		
16935	1-11-75	U. S. Nuclear Regulatory Comm.	93000			93000



Industrial Valley Bank  
and Trust Company

*[Handwritten signatures]*

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