

ATG, Inc.

Appendix 2

Remediation

of

Fort McClellan, Building 3192 and Grounds
Anniston, AL

Health and Safety Plan

Allied Technology Group, Inc.
1515 Main Street
Genoa, OH 43430

December 1994

Fort McClellan
Remediation of Building 3192 and Hot Cell
December 1994

ATG, Inc.

PROJECT HEALTH AND SAFETY PLAN

Radiological Remediation

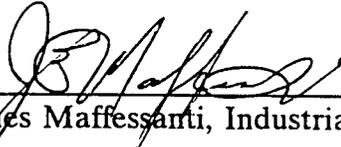
of

Fort McClellan Hot Cell and Grounds

Anniston, AL

December 1994

Concurrence:


James Maffessanti, Industrial Safety

Concurrence:


Bill Haney, Director Decontamination/Decommissioning

Approval:

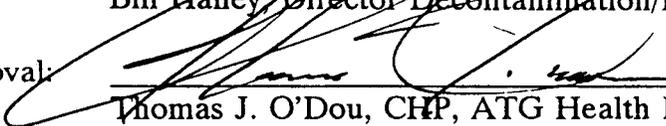

Thomas J. O'Dou, CHP, ATG Health Physicist

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1.0 INTRODUCTION

Allied Technology Group, Inc. Project Health and Safety Plan incorporates the health and safety procedures and practices to be followed during the activities specified in the Radiological Control Procedures. This Project Health and Safety Plan will be used to support the work activities and will be verified with the guidelines specified in the ATG Corporate Health and Safety Plan. This Project Health and Safety Plan includes radiological and industrial safety concerns.

2.0 SCOPE OF WORK

Sample collection, monitoring, and work with all radioactive materials will be performed following the guidelines specified in the Radiological Characterization Plan by Allied Technology Group personnel. For the purpose of this contract, all contaminated material will be handled with radiological contamination controls in place. Phases I and II of this project involved the radiological characterization in, under, and around Building 3192. Phase III involves mobilization, site set up, the decontamination identified in Building 3192, it's contents, any contaminated soil surrounding the building, packaging of contaminated material for shipment, final termination survey for all affected areas and immediate surrounding unaffected areas, and demobilization.

No adverse impacts are expected during the performance of this contract. There will be no expected air emissions, liquid releases, personnel exposures or environmental impacts during the packaging and shipping of any contaminated material. The work tasks will be performed by trained and qualified personnel. Oversight and monitoring will be performed by trained and qualified personnel in accordance with the Health and Safety Plan procedures.

3.0 HAZARD ASSESSMENT

Hazard assessment will be evaluated in three categories; radiological hazards, industrial hazards and environmental hazards. Appropriate personnel protection equipment, monitoring devices and data acquisition will be applied for all hazards.

3.1 Exposure

The principal radiation hazards at Fort McClellan are from and Cobalt 60. It is expected that an individual performing work on this project will receive less than 30 millirem. Additional exposure to radiation will come

from the reference sources used in performance tests of the radiation detection equipment and from the samples taken to assess the potential hazards. The reference sources will be used by the Radiation Protection Technician and will be maintained in a labeled and locked container. Samples taken to monitor the potential hazards will be sealed and handled appropriately and in as short amount of time as possible. Normally, the Radiation Protection Technician will handle and analyze the samples.

3.2 Industrial Hazards

Industrial hazards for this project should be limited to mechanical failures, heavy loads, suspended loads, physical stress and high temperature exposure.

Lifting, suspending, moving and packaging of materials could cause wear and tear on the equipment or fatigue to the workers. Mechanical failure will be reduced by using equipment in near new condition and not overloading the equipment. The equipment will need to be visually inspected by qualified personnel prior to each use to reduce the potential for failure. Personnel safety equipment will be required for field work on this project. Safety shoes and safety glasses will be required for personnel. Hard hats shall be required when overhead hazards are present.

Physical stress could occur if an individual tries to lift items that are too heavy or oversized. Individual lifting limits will be 100 lbs. maximum but should be limited to an average of 50 lbs. Items that are odd shaped or bulky will be lifted by more than one individual or by mechanical means. Accidents will be handled on a case by case basis and will be evaluated by the Project Manager to determine if preventive measures can be applied to preclude the accident from reoccurring. Complications from high temperature exposure, such as heat exhaustion, will be handled with medical treatment as deemed necessary by the Project Manager.

3.3 Environmental Hazards

Hazards to the environment could most likely occur from aberrant weather, an accident or from carelessness while performing the work tasks. Controlling the amount of unsealed material, at any given time, will reduce the extent of an environmental impact.

4.0 WORKER PROTECTION

4.1 Personnel Protection

The work on decontamination of the Hot Cell involves hazards typically present during radiation work. In general, ATG work procedures are in effect for safety of our workers and others. However, the following points may need emphasis.

4.1.1 Contamination Control

The most important tasks for contamination control are decontamination of the hot cell and removal of the building drains. It is anticipated that the total activity removed from the walls, floor, and ceiling of the cell will not exceed approximately:

$$1000 \text{ pCi}/100 \text{ cm}^2 \times (2 \times 1.5 \text{ m} \times 2.5 \text{ m} + 2 \times 2.5 \text{ m} \times 2.5 \text{ m} + 2 \times 1.5 \text{ m} \times 2.5 \text{ m}) \\ \times 100^2 \text{ cm}^2/\text{m}^2 = 1000 \text{ pCi}/100 \text{ cm}^2 \times 2.75 \text{ E}5 \text{ cm}^2 = 2.75 \text{ E}6 \text{ pCi} = 2.75 \text{ } \mu\text{Ci}$$

This activity does not represent a significant hazard but should not be allowed to be distributed outside the cell in order to maintain doses to personnel ALARA.

4.1.2 Industrial Safety

Industrial safety is an important consideration on this job. Several operations will involve use of heavy equipment which will require qualified operators and care in assignment of personnel in the area of this equipment during operation.

4.1.2.1 Crane operations will be conducted under contract to remove the hot cell door from its location inside the building, to outside. All personnel must be made aware when crane operations are in progress. All personnel will stand clear of these operations. When the door is lifted from the structure, no personnel not associated with the lift will remain in the building.

4.1.2.2 A front loader will be used to remove surface soil from contaminated areas outside. Only personnel

associated with this operation will be in the area of the front loader while it is in motion. A lead technician will be assigned to this area to enforce safety restrictions associated with this operation.

- 4.1.2.3 The high pressure sponge-jet system to be used for decontamination of the hot cell sprays abrasive media at high velocity onto the item being decontaminated. Only the operator and his safety assistant will be allowed in the area of this device during decon of the cell or any other items it is used on. All personnel who operate this device will receive hands-on instruction from a qualified ATG operator. The qualified operator will certify the individual prior to any unsupervised operation of the sponge-jet system. This certification shall be noted in the project log.
- 4.1.2.4 Lifting operations with the hot cell crane will only be completed with one person in the cell. These operations will only be done with direct communication between the operator and the person in the cell. The hot cell crane shall only be used for lifting materials for which it was designed.
- 4.1.2.5 All personnel will be required to wear safety glasses, steel toe shoes, and hard hats while in any work area during work operations.

4.1.3 Respiratory Protection

Respiratory protection may be required during certain operations. All personnel assigned respiratory protection must be medically qualified, trained on the use of the equipment, and when appropriate, have qualitative fit testing. All personnel in respirators must be clean shaven. All respirators must be cleaned and checked daily. The areas where respirators may be required are: the hot cell during decontamination with the sponge-jet or scabber, and during work on the classroom and ventilation systems during fiberglass insulation removal. Every effort shall be made to reduce the amount of airborne material.

4.1.4 Personnel Dose

The whole body dose rates from the Cobalt 60 in any of the highest response areas of the site are less than 0.1 millirem per hour as measured with a micro-R meter. Therefore, as a conservative estimate of the personnel dose for the job, an individual exposed to this level of radiation for 12 hours per day for 20 days would receive a dose of $(0.1 \times 12 \times 20)$ or 24 millirem. This is much lower than 10% of the annual occupational exposure limits for radiation exposure, 5 rem. Therefore external dosimetry is not required by regulation. However, as a conservative measure, ATG will require dosimetry for all project personnel.

4.1.5 Radiation Work Permit

The Radiation Work Permit (RWP) for work at the Fort McClellan Site will state the personal protective clothing that is to be required to be worn while working in specific project activities. The proposed RWP for this work is included in this plan.

4.2 Personnel Monitoring

Occupational exposure will be continually monitored for all personnel on this ATG project. Personnel monitoring for this project will be supplied by Allied Technology Group using the following procedure.

4.2.1 Occupational Exposure Guides

Allied Technology Group Administrative Control Levels per calendar year;

4.2.1.1	Whole Body	1.0 Rem
4.2.1.2	Extremities	5.0 Rem
4.2.1.3	Skin	5.0 Rem

The ATG Corporate Health Physicist shall approve any authorization for exposure above the annual control levels. This approval will only be given if the dose is necessary and shown to maintain collective dose on the project ALARA.

4.2.2 Site Registration Form

All personnel assigned to work on the project must complete a Site Registration Form, ATG Form 109, prior to starting work. Completed Site Registration Forms will be retained with the personnel exposure files.

4.2.3 Occupational Radiation Exposure History

Before an individual will be permitted to work in a controlled area, a U.S. Nuclear Regulatory Commission Form 4 must be completed and reviewed by the Project Manager or Radiation Protection Supervisor. Exposure results shall be listed on the NRC Form 4.

4.2.4 Thermoluminescent Dosimetry

TLDs shall be the permanent record of an individual's occupational radiation exposure. The TLDs used by Allied Technology Group are supplied and evaluated by a NVLAP approved vendor. All personnel assigned to the project will be issued a TLD for the job or on a monthly basis as the work requires.

The individual's name, social security number, issue date, and a date of return are to be recorded on the TLD Issue Log, (ATG Form 111a). In the event of a lost TLD, immediate notification to the Project Manager or Radiation Protection Supervisor is required. A Lost TLD Report (ATG Form 111), will be completed and filed in the individual's exposure file. Monthly TLD results will be documented.

The NRC Form 4 will be updated when the TLD results are received and will be maintained in the individual's exposure file.

4.2.5 Radiation Work Permits

All personnel working at the Fort McClellan project must be assigned to a specific Radiation Work Permit, (ATGF-002 - Previously ATG Form 113), applicable to the job being performed. A Radiation Work Permit Sign In Sheet (ATGF-023) will be attached to each Radiation Work Permit if deemed necessary by the

Project Manager or designee. All personnel assigned to a job, requiring a Radiation Work Permit, shall sign the RWP Sign In Sheet.

4.2.6 Occupational Radiation Exposure History Letter

An Occupational Radiation Exposure History Letter, (ATGF Form 047 - Previous ATG Form 115) will be completed for all personnel assigned to the job. Copies of this letter are sent to the individual and the Allied Technology Group Corporate office in Fremont, CA., within 30 days of obtaining the monitoring results.

4.3 Training

Individuals assigned to this project will be trained and qualified radiation workers. Training records will be supplied as part of the Project Quality Assurance Plan. Training specific to the project will be performed prior to the start of work by the Project Radiation Protection Supervisor and recorded on the Training Record, (ATGF Form 027 - Previous ATG Form 102). Requirements of the Project Detailed Work Procedure, Project Quality Assurance Plan and the Project Health and Safety Plan will be covered in the on-site training.

4.4 Decontamination

Contamination control barriers will be established and personal protective equipment will be required to minimize the potential for areas or personnel to become contaminated. In the event that personnel contamination is detected, the following procedure will be used to remove or contain the contamination.

4.4.1 Explanation

This procedure is a follow-up to the Radiation Survey Procedure which describes how a radiation worker detects personal contamination. Once detected, this procedure will explain where and how to decontaminate to acceptable levels. It further provides for ongoing documentation to assure adequate review and improvement of existing procedures.

4.4.2 Decontamination Methods

4.4.2.1 Personnel Decontamination

When contamination is found on the worker, the worker shall notify a Radiation Protection Technician immediately and inform him/her that he/she has become contaminated. The worker will indicate where he/she believes the contamination occurred, and the route taken to where the surface contamination was detected. This information will assist the Radiation Protection Technician in determining which areas to survey to avoid the contamination of other personnel. After notifying the Radiation Protection Technician, the individual who is contaminated shall, if possible, isolate the contaminated item or items by the use of clean plastic bags and remain in the personnel survey area. Any method of decontamination used will require monitoring and documentation of the results for each step in the procedure. All liquids used for decontamination purposes, will be considered contaminated and handled as radioactive waste. A spray solution of RadiacWash or equivalent mild detergent solution should be used as the primary agent to remove skin contamination. RadiacWash foam will be sprayed on the contaminated area, allowed to soak for a few minutes, then wiped clean. Radiation surveys will be performed between each wash.

NOTE: UNDER NO CIRCUMSTANCES WILL THE SKIN BE ABRADED WITHOUT DIRECT MEDICAL SURVEILLANCE. NOTIFY THE ATG PROJECT MANAGER AND THE CORPORATE HEALTH PHYSICIST SHOULD THIS BE RECOMMENDED.

Additional washing may be required if the affected area contamination levels are not reduced to below acceptable limits. If needed, lava soap, a soft brush and small amounts of water can be used with light pressure to produce a heavy lather. Only wash 3 times

for about 2 minutes each. Rinse and monitor. Use care not to scratch or erode the skin. Apply lanolin or hand cream to prevent chapping. Continued washing will abrade the skin. Any additional decontamination techniques shall be approved by the ATG Health Physicist on a case by case basis.

4.4.2.2 Clothing Decontamination

When contamination is found on clothing, the worker shall immediately notify a Radiation Protection Technician and inform him of the situation, including where the worker believes the contamination occurred and the route taken to where the contamination was detected. This information will assist the Radiation Protection Technician in determining which areas to survey to avoid the contamination of other personnel. The contaminated clothing shall be removed, taking special care not to further contaminate additional clothing or personnel. The item(s) shall be surveyed to determine the degree of contamination. Depending on the source of contamination, decontamination methods such as using tape to adhere the contamination to or scraping a shoe with a knife may be used. If the contaminated item cannot be easily decontaminated without using soap and water methods, the item shall be disposed of as radioactive waste.

4.4.3 Documentation

In order to fully assess the degree of contamination, the skin dose to personnel and to critique the incidents to improve future procedures, documentation is necessary. Documentation of the event should start and continue from the initial detection of contamination to the final release. Personnel contamination will be classified in two categories, skin and clothing. A separate form shall be used for each, along with a Contamination Report Index, (ATG Form 116) to chronologically categorize all personnel contamination.

A Personnel Contamination Report, (ATG Form 117), and a Clothing Contamination Report, (ATG Form 118) shall be completed by the individual performing the decontamination and submitted to the Project Manager or Radiation Protection Supervisor for evaluation and filing. The Contamination Report Index shall be maintained by the Project RPS. The contamination reports shall be maintained in the individual's exposure file.

4.5 Bioassays

Allied Technology personnel are monitored for internal contamination on a routine basis. Whole Body Counts may be performed annually for gamma emitters. Urinalysis samples will be taken at the start and completion of the project (or the employment time) for all individuals. The samples will be analyzed for radionuclides associated with the project.

4.6 Radiological Surveys

4.6.1 Purpose

The purpose of this procedure is to set guidelines for the Allied Technology Group personnel to maintain control of the radioactive materials.

Designated work areas will be established to maintain an efficient material flow path. During the work operations, routine and periodic assessments are needed to assure that control of the radioactive material is maintained. The routine assessments are in the form of radiation surveys and periodic assessments are an accumulation of surveys and other data from other procedures. The designated areas requiring radiation surveys will be on a routine or special survey basis, depending on the work operation being performed. All surveys will be reviewed for information and accuracy by the Radiation Protection Supervisor daily.

Routine surveys are required on a daily basis in accordance with Radiation Work Permit requirements. RWP surveys are only required if work operations are to be performed in the area described on the RWP. Special surveys shall be required when the Project RPS or operation procedures deem necessary.

Types of surveys needed to make the regular assessments may include; dose rate surveys, contamination surveys or airborne contamination surveys. Individuals performing routine and special surveys will be designated by the Project RPS and will be trained in radiation survey techniques.

4.6.2 Performance Test

Radiological survey instruments are required to be calibrated at six month intervals or more frequently if indicated by the customer or required due to abnormal instrument operation. This primary calibration is performed by Ludlum Measurements, or other certified calibration laboratories. Primary calibration certificates and reference source certificates will be supplied with all radiological survey equipment. When the count rate and dose rate meters are returned from calibration, a reference check shall be performed prior to placing the instrument in use with one or more of the designated reference sources.

The reference tests will be performed using sources that are intact and appropriate to evaluate instrument response. A performance check shall be performed on meters that are in use prior to each day and intermittently during continuous use.

4.6.3 Dose Rate Surveys

Routine dose rate surveys will give the radiation worker and supervisory personnel an indication of the amount of external occupational radiation exposure the worker will receive while performing routine work operations. Special dose rate surveys are needed to determine the disposition of radioactive material or if engineering controls are needed to reduce the exposure to the worker. Routine and special dose rate surveys shall be performed using the Ludlum Model 19 or equivalent micro R meter. Prior to using a meter, the individual performing the survey shall verify that the meter is in calibration and the batteries are in good working condition and that the meter performance test has been completed. While performing dose rate surveys, consideration must be given to the types of radiation that are present in the work area so that hazards to personnel in the work area can be identified.

Occupational external radiation doses to personnel are attributable to gamma rays and beta particles. usually the gamma ray contribution is the greatest. Dose rates from beta particles are usually more limiting as an extremity hazard for close work with contaminated equipment or radioactive material. Documentation of the survey results shall be recorded as mR/hr (millirem/hr). General work area dose rates will be recorded on the Radiological Survey Form, (ATGF Form 001 - Previous ATG Form 124).

4.6.4 Contamination Surveys

Radioactive contamination surveys are an important part of the radiation protection program. Based on results of radioactive contamination surveys that are performed in the various work areas, assessments can determine the controls for radioactive material and to establish radiation protection requirements for personnel working in an area or on equipment.

There are two basic types of radioactive contamination; fixed and smearable (removable). Radioactive contaminants are only external exposure hazards as long as the contamination remains fixed. Smearable radioactive contaminants represent both external and internal exposure hazards. Routine contamination surveys are primarily conducted to determine smearable levels while special contamination surveys are for smearable and fixed.

Usually contamination surveys are performed in conjunction with dose rate surveys. Documentation of contamination survey results will be recorded on the Radiological Survey Form by the individual performing the survey. All smear results will be recorded in disintegrations per minute per 100 square centimeters (dpm/100 cm²) unless otherwise indicated on the Radiological Survey Form. A drawing of the survey area or item shall be completed by the surveyor. The individual survey point shall be numbered and the number circled, indicating a smear location on the drawing. Principally, radioactive contamination consists of beta-gamma emitters.

Alpha survey results will be recorded with an "A" or "Alpha" while beta-gamma survey results will be assumed. Smear surveys are

performed by wiping a surface (floor, wall, tool, tank, etc.) with a disposable smear pad, using moderate but even pressure, and wiping an area of 100 cm² (approximately 4" x 4").

Instrumentation to be used for fixed beta-gamma contamination surveys shall consist of a thin window GM probe, a Ludlum Model 44-9 or equivalent, attached to a count rate meter, a Ludlum Model 3 or equivalent. Care must be taken to avoid damage to the probe. Instrumentation to be used for fixed alpha surveys shall consist of a zinc sulfide alpha probe, Ludlum Model 43-5 or equivalent, attached to a Ludlum Model 3 (or equivalent meter/probe combination).

Evaluating smears for radioactivity should be performed using a Model 2929 Dual Channel Scaler or equivalent. The smear pads shall be placed in a planchet positioning the planchet inside the sample tray. The smears will be counted for 2 minutes. The total indicated counts per minute, minus the background counts per minute, multiplied by the efficiency factor, will equal the disintegrations per minute of the smear area.

$$A_s = \frac{(C_s - C_b)}{\text{Eff}}$$

where: A_s = Smear Activity (dpm)
 C_s = Sample Count Rate (cpm)
 C_b = Background Count Rate (cpm)
Eff = Instrument Efficiency (c/d)

Personnel contamination surveys shall be performed by any individual exiting from a contamination controlled area. The background count rate in these areas shall be less than 200 cpm. A fixed frisking point shall be established by the step off pad area. Instructions for personnel surveys will be posted by the friskers. In addition to personnel, all items leaving a contamination area shall be surveyed and will be free of contamination upon release.

Any time a vehicle exits a contamination controlled area, a smear survey shall be performed on the tires, and forks if applicable.

All items with smearable contamination levels below 1000 dpm/100 cm² will be considered non-contaminated. All items with smearable contamination greater than 1000 dpm/100 cm² shall be considered contaminated and must be handled appropriately. All items surveyed for unconditional release from the restricted area shall be less than the following limits:

- 4.6.4.1 Smearable beta-gamma <1000 dpm/100 cm²
- 4.6.4.2 Smearable alpha <20 dpm/100 cm²
- 4.6.4.3 Fixed beta gamma Not more than 15,000 dpm/100 cm² or 5,000 dpm/100cm² averaged over 1 square meter.

Documentation of acceptable survey results shall be performed on the Unconditional Release Record, (ATG Form 010).

If contamination survey results indicate a release of material or breach of containment barriers, a special environmental survey shall be performed to evaluate the levels and extent of the spread of contamination. Results of the special environmental survey shall be immediately reported to the ATG Health Physicist.

4.6.5 Airborne Contamination Surveys

Airborne contamination surveys are a convenient method of determining the amount of radioactive material suspended in air at the time of the sample. Air sampling must be performed in conjunction with specific aspects of work operations to achieve representative results. Because of this, quantities and frequencies of air samples cannot always be predetermined. There will be no classification as to routine and special air sample surveys.

All air samples will be issued an identification number. The Radiation Protection Technician will maintain the Air Sample Identification Record, (ATGF Form 048), to account for all air samples taken. All air samples will be documented on the Air Sample Data & Analysis Form, (ATGF 030), for the specific day

and time of day the air sample was taken. The RWP will determine the minimum quantities needed to make a thorough evaluation.

Airborne contamination surveys consist of two components, sampling and analysis. Each component is unique and need certain guidelines to ensure uniformity of results. Any deviation from the guidelines shall be noted to aid in the overall evaluation.

4.6.5.1 Sampling

Air samplers are instruments that pull a known quantity of air through a filter media at a known rate. The airborne contaminants are trapped on the filter media for future evaluation. The air filter media will be F&J Specialty, Inc. #FP47 or equivalent filters capable of collecting particles with a diameter of 0.3 micrometers at an efficiency of 99%.

Air samplers are calibrated on an annual basis. Air samplers are calibrated to ensure the quantity of air pulled through filter media is known. Air samplers are not to be used if the calibration has expired. Prior to use, an inspection of the air sampler shall be performed to ensure the rotometer is functioning, clean filter media is used and the calibration is current.

For sample collection, the air sampler head, which holds the filter media, should be placed to represent the breathing zone of the workers in the respective work area.

Starting time, starting flow rate, time off, and ending flow rate are to be recorded and maintained with the filter media for analysis. A minimum of 100 cubic feet of air must be pulled through the filter media to obtain an adequate representative air sample. The air samplers will operate continuously throughout the work day.

All samples shall be removed from the sampler head very carefully to prevent loss of sample material. The samples will be separately packaged to prevent damage and ensure proper evaluation of sample activity at the analysis station.

4.6.5.2 Analysis

Counting instrumentation shall consist of a Ludlum Model 2929 Dual Channel Scaler or equivalent, attached to a Model 43-10-1 probe or equivalent. The probe shall be placed in a shielded area and be positioned over a slide tray for planchettes.

For routine air sample counting, the shielding area background shall not exceed 50 counts per minute. Counting background and counting efficiency data shall be recorded on the Air Sample Data & Analysis Form (ATGF Form 030). Supporting data required to obtain air sample results shall also be recorded on ATGF Form 030.

Information required includes; date, counter background, counter efficiency, sample identification and location, time the sample was started and stopped, average flow rate, count start time, total count time, and total counts of the counter. Calculated results will be recorded in microcurie per cubic centimeter (uCi/cc), unless otherwise indicated.

Samples shall be carefully removed from the packaging to prevent loss of sampled material. Counting a sample consists of placing the filter paper in a planchet and positioning the planchet directly under the counter probe. Counting time will be five (5) minutes unless rapid evaluations are needed for unusual situations. A rapid evaluation could be assessed by using a count rate meter, but must be approved by the Project Manager or Radiation Protection Supervisor. All air sampler filter papers

will be submitted to the Radiation Protection Supervisor when initial sample results have been obtained.

The following formula shall be used to calculate the results of the air samples:

$$\{Tc/Tc_i\} - Bkg = Ccpm$$

$$\frac{Ccpm}{Ns_i \times Fl_i \times \text{Eff} \times Fe \times 2.22E6 \times 2.83E4}$$

Where:

- Tc = Total Counts
- Tc_i = Total Count Time
- Bkg = Background Counts per minute
- Ccpm = Corrected counts per minute
- Ns_i = Net Sample Collection Time
- Fl_i = Sample Flow Rate
- Eff = Instrument Detection Efficiency
- Fe = Filter Collection Efficiency
- 2.83E4 = Conversion Factor for cubic feet to millileter

4.6.5.3 Action Levels

Action Levels of air sample results cannot always be readily attainable. All situations must be considered along with follow-up sampling and counting to aid in the final assessment. A background air sample station shall be established to aid in determining the work area airborne contamination levels. The background air sample results shall be subtracted from the work area air sample results to determine the corrected work area airborne contamination levels when practical.

If the work area (without respirators) airborne contamination exceeds 1.0×10^{-9} uCi/cc above background, a stop work condition shall exist and all workers shall leave the work area immediately. Follow-up sampling shall be performed and evaluated

prior to allowing work to continue. All air samples with results greater than 3.0×10^{-10} uCi/cc shall have a half life determination performed. The half life determination formula used is:

$$T_{1/2} = \frac{-0.693 \times t}{\ln (Ccpm_2/Ccpm_1)}$$

where: $T_{1/2}$ = Sample half-life (min)
t = Decay time between $Ccpm_1$ and $Ccpm_2$ (min)
 $Ccpm_1$ = Corrected count rate at the start.
 $Ccpm_2$ = Corrected count rate at the end.
ln = natural logarithm

If the half-life of the radionuclides on the filter paper is less than 75 minutes then short lived radionuclides of the Radon-222 family are assumed to be present. Control measures should minimize the concentration that personnel are exposed to, to minimize internal dose. If the half-life of the radionuclides on the filter paper is greater than 75 minutes a more thorough assessment is required and the results brought to the attention of the Project RPS.

5.0 SAFETY RULES

5.1 Purpose

The purpose of the safety rules section is to provide a code of conduct which will allow for a smooth operation of the job site with as little time loss as possible due to violation of Safety Rules and Regulations. The safety rules apply to both the workers assigned to the project and visitors.

5.2 General Rules

Compliance with the Safety Rules is considered a condition of employment, and as such, disciplinary action may be taken for violations as necessary. Safety rule violation and disciplinary action will be determined by Allied

Technology Group management. All workers have the responsibility to report safety violations to their superior.

5.3 Safety Rules

The following safety rules have been compiled and reviewed by Allied Technology Group management and will be accepted by all employees prior to employment. A copy of the Safety Rules and Regulations will be posted at the job site and will be made available to any employee requesting a personal copy.

- 5.3.1 Employees must be in working clothes and ready for work at the designated starting time.
- 5.3.2 Employees may take lunch breaks only during designated times and must eat in the assigned area while on the job site. There will be no smoking, eating or drinking while handling any hazardous materials.
- 5.3.3 Personnel will not quit work before the time designated for the conclusion of the work shift. There will be sufficient time allocated for removal of protective clothing or work clothes.
- 5.3.4 Employees must report to work each regularly scheduled work day. One hour call in time will be allowed to notify your superior of an absence. Excessive absentees will not be tolerated.
- 5.3.5 No employee will report to work under the influence of alcohol or drugs. Likewise, it is forbidden to carry or use alcohol or drugs on the job site or company property.
- 5.3.6 Personnel must comply with both verbal and written instructions from a supervisor or foreman.
- 5.3.7 All personal work injuries must be reported to the Project Manager.
- 5.3.8 All unsafe conditions, or unsafe acts must be reported to the Project Radiation Protection Supervisor or the Project Manager.
- 5.3.9 Any required personal protective devices and clothing must be properly worn by all personnel while on the job site.

- 5.3.10 Radiological monitoring equipment such as air samplers must not be tampered with or altered.
- 5.3.11 Good housekeeping by all personnel is considered mandatory.
- 5.3.12 Employees will not engage in malicious horse play, practical jokes or mischief while on the job site.
- 5.3.13 Fighting or attempting bodily injury to another employee while on the job site is not permitted.
- 5.3.14 Carrying a concealed weapon on the job site is expressly forbidden.
- 5.3.15 Falsifying company records or falsifying data will not be tolerated and will result in disciplinary action.
- 5.3.16 Equipment marked "Out Of Service" shall not be used.

5.4 Disciplinary Actions

The following steps will be administered in a fair and nondiscriminatory manner:

- 5.4.1 All Disciplinary actions will be documented and maintained in the employee's personnel file.
- 5.4.2 Supervisory personnel are responsible for giving appropriate and specific safety instructions and are responsible for assuring that the instructions are clearly understood.
- 5.4.3 A violation of the safety rules will be promptly corrected. The violations will be documented by the Project Manager and the employee will be given a copy of the written violation report.
- 5.4.4 Individual safety rule violations will be assessed on their merit with appropriate consideration given to the seriousness of the violation, the effect on the other employees, the employee's prior work record and previous safety violations. Any disciplinary action to be taken will be approved by the Project Director.

- 5.4.5 There may be some situations where the safety rule violation is so serious that modification or total disregard of the steps may be warranted. In these situations the employee may be suspended or terminated. It is suggested that in cases of this type, the employee be suspended pending the outcome of a full investigation of the incident and the employee's previous safety history. When this method is followed, the results of the investigation should determine the severity of the discipline to be administered.

6.0 STOP WORK CONDITIONS

During the performance of this contract, certain conditions may be encountered that will require specific work tasks to be immediately halted. Conditions such as; discovery of explosive materials, excessive contamination levels in a non-controlled environment, high wind speeds, extreme high or low temperatures, severe storms or flash floods. Depending on the specific work task that is being performed at the time on such an adverse condition, work may be halted until a safe condition exists to restart the task.

If time permits, the Project Manager will communicate with the Government representative to determine the appropriate action to be taken at a given time. The following guidelines will be used to aid in determining stop work conditions.

- 6.1 Excessive Contamination Levels in non controlled areas means that contamination levels in excess of 1000 dpm/100 cm² have been detected in non contamination controlled areas. All work tasks will immediately be halted and a concerted effort will be made to clean the affected area. The Radiation Protection Supervisor or Project Manager will be immediately notified of such conditions and work will not restart without his approval.
- 6.2 High Wind Speed means a steady wind speed in excess of 25 mph or wind gusts of 40 mph that seem to be ongoing throughout the day. Unsealed sources of radioactive material may be spread to non controlled areas if wind speeds are excessive. The soil packaging activity will be performed inside a sheltered area but may still be affected by steady winds or wind gusts. If excessive winds are encountered, the soil packaging activity will cease and the soil containers will be sealed and the remaining soil covered with plastic. Other work activities may be halted at the discretion of the Project Manager.

- 6.3 Extreme High Temperatures means in excess of 105 degrees. Heat stress to the workers may occur. When high temperatures are occurring, specific work tasks that are hampered will be halted. Work tasks that require physical work or work tasks that protective clothing is required may be affected. The RPS and/or Project Manager will evaluate the conditions and determine if work tasks will be halted.
- 6.4 Severe Storms or Flash Floods could cause all work tasks to be halted. Water damage to the controlled areas and barriers will cause all work tasks to be halted until the areas can be repaired. Should these type of conditions occur, the equipment and areas will be secured and evacuated. Prior to the restart of work, the Project Manager will receive approval from the contract administrator or the ATG Health Physicist.
- 6.5 Natural Disasters will be handled on a case by case basis. Depending on the type and magnitude of the disaster, work operations will be determined by the Project Manager.

7.0 ACCIDENT REPORTING

7.1 Insurance

Allied Technology Group's Worker Compensation Carrier has the responsibility for the following:

- 7.1.1 Making sure that every claimant is entitled to a fair investigation of his/her claim and a prompt decision as to its merit.
- 7.1.2 Determining how much a particular liability case is worth and negotiating a settlement within that range.
- 7.1.3 Making sure that cases of no liability, tenuous liability or those tainted by fraud are vigorously resisted.
- 7.1.4 Consulting with the company's Controller on all claims requiring settlement in excess of \$5,000.00.
- 7.1.5 Consulting with the company's President or Vice President on all claims requiring settlement in excess of \$10,000.00.

7.1.6 Maintaining the risk management reporting system, the risk detail report and forwarding monthly report updates to the company's President or Vice President.

7.2 Accident or Injury Reporting Requirements

To make sure that each incident is properly and appropriately reported and recorded, the Foreman's Report of Injury, (ATG Form 133) is required. Foreman's Report of Injury will provide all of the information to generate the employees first report of an injury. It can also be used as the company's medical authorization. The Foreman's Report of Injury must be completed in detail for every accident, injury or illness which occurs to an Allied Technology Group employee, visitor or subcontractor either in connection with or on company property or on a contracted job site. Every effort should be made to complete this form as quickly as possible following notification of the incident. The injured worker's foreman is responsible for completing this form. Once completed, the form should be reviewed and signed by the Project Manager and Project Director and a copy forwarded to the insurance carrier.

7.3 Employee's First Report of Injury

Each state within the United States has either developed its own Employer's First Report of Injury Form or has indicated a willingness to accept a suitable substitute. Generally where a state does not have its own form, the substitute is that form used by the employer's Workman's Compensation Carrier. Every state requires some type of injury notification.

The Project Director shall report immediately by telephone, or in writing, to the nearest District Office of the Division of Occupational Safety and Health any serious injury, accident or death of an employee. "Immediately" is defined for this purpose to mean as soon as practical but no longer than twenty four hours after the employer knows of or should have known of the death, illness or serious injury. Serious injury or illness is defined and shall be judged by Section 300 (H), Title 8, California Administrative Code.

The Project Director will notify the nearest office of the Division of Occupational Safety and Health whenever a State, County, or Local Fire or Police Agency is called to an accident involving an employee that has suffered a serious injury, illness or death.

7.4 OSHA Forms

The OSHA Form 200 Log and Summary of Occupational Injury and Illness along with the OSHA Form 101, Supplementary Record, will be completed and maintained at the Allied Technology Group corporate office in Fremont, CA. The corporate office has the responsibility to record and report OSHA reportable incidents. The forms will be made available on request.

8.0 HAZARD COMMUNICATION PROGRAM

8.1 Purpose

The purpose of this written Hazard Communication Program is to comply with the requirements of the Code of Federal Regulations, Title 29, Part 1910.1200, "Hazard Communication". This program is site specific.

8.2 Policy

Allied Technology Group as an employer engaged in a business within the Standard Industrial Classification, Codes 20 through 39, where chemicals or hazardous materials are either used or are produced for use. This program will assure that the hazards of all chemicals found in the work place will be evaluated and that information concerning their hazard will be transmitted to all affected employees.

The known hazard that will be handled on this project will be radioactive material. The hazard has been evaluated in the Project Health and Safety Plan. Communication to the employees will be handled in the project training and verified through the Project Quality Assurance Plan. Identification of the hazard is required by posting radiological controlled areas and labeling containers or items that contain radioactive material in accordance with 10 CFR 20.

Any currently unknown hazards will be handled in the same manner when they are encountered. Material Safety Data Sheets will be distributed and the material will be properly labeled. The Project RPS will be responsible for conducting the evaluation, communication and identification.

9.0 FORMS

Radiation Work Permit (RWP)	ATGF-002
Unconditional Release Record	ATGF-010
RWP Sign In Sheet	ATGF-023
Training Record	ATGF-027
Air Sample Data & Analysis	ATGF-030
Occupational Radiation Exposure History	ATGF-047
Air Sample Identification Record	ATGF-048
U.S. NRC Form 4	
U.S. NRC Form 5	
Lost TLD Report	ATG Form 111
TLD Issue Log	ATG Form 111a
Personnel Radiation Exposure Record	ATG Form 112
Contamination Report Index	ATG Form 116
Personnel Contamination Report	ATG Form 117
Clothing Contamination Report	ATG Form 118
Survey Report Form	ATG Form 124
Foreman's Report of Injury	ATG Form 133
OSHA Form 200 Log and Summary of Occupational Injury and Illness	
OSHA Supplementary Record	OSHA Form 101