

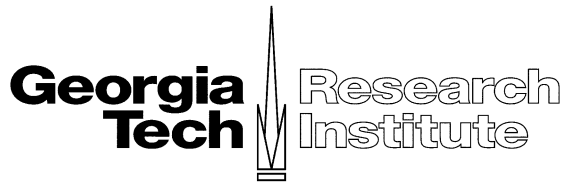


## **POTENTIAL HEALTH & SAFETY HAZARDS ENCOUNTERED DURING HAZARDOUS MATERIAL & CONFINED SPACE TRAINING**

Because Georgia Tech Research Institute (GTRI) strives to provide the most realistic training possible, many of the health and safety hazards present on a real hazmat incident, remediation project, or permit-required confined space entry or rescue are also present during training. During GTRI hazardous material and confined space training you will have the opportunity to wear and work with SCBAs (Self-contained Breathing Apparatus), totally-encapsulating suits, and entry and rescue gear on several occasions. When wearing SCBAs, your field of vision is restricted by the facepiece. If you wear eyeglasses your vision will also be impaired, for you cannot wear normal glasses with the facepiece. When you wear a totally-encapsulating suit on top of the SCBA your field of vision is further restricted and impaired due to the hood and lens of the suit. Your hearing, dexterity, and mobility are also severely restricted and impaired while wearing such suits. Wearing a retrieval harness, plus SCBA, complicates mobility even further. Therefore, it is important that you walk carefully and move deliberately in order to reduce the chances of tripping or slipping.

Wearing SCBAs and/or encapsulated suits also places considerable strain on your cardiopulmonary and musculoskeletal systems. The encapsulated suit weighs 8-10 pounds, depending on the particular type, and the SCBA is another 25-30 pounds. Retrieval harnesses plus other rescue equipment can add another 10-plus pounds, so you can see that the weights involved with all of this PPE can create health and safety issues. You will quickly get hot working inside of a completely sealed, non-breathing suit, and heat stress can be a problem, especially during hot weather. Training suits are not vapor-tight and permit air exchange with the outside, but are still hot. To further complicate things, some of you may be claustrophobic, effectively preventing you from wearing either the SCBA or the totally-encapsulating suit or being lowered into a confined space. Please consider all of these before you suit up or participate in any of the field practicals. We encourage you to try all of the exercises, but just be conscious of any health problems you may have.

Respirators themselves are often a new experience for many students. Our SCBAs are all pressure-demand units. This makes inhalation easier, but exhalation a bit more difficult. The air is cool and dry and can dehydrate your nose and throat if breathed for extended periods of time. All units have an emergency bypass valve for use *only* in the event of a main-line valve failure. In the extremely rare event of both valves failing or running out of air, you will not be able to breathe through the respirator. Don't panic; if in an encapsulated suit, just unhook your regulator and breathe the air inside the suit. If you don't have a suit on, just remove the regulator and breathe normally. In training you will never actually be in a contaminated atmosphere, so there is no exposure danger.



## **SAFETY & HEALTH PROTECTIVE MEASURES FOR GTRI HAZARDOUS MATERIAL & CONFINED SPACE STUDENTS**

Georgia Tech Research Institute has implemented the following safety and health procedures which are designed to protect you against unforeseen hazards. Working, even in a training environment in totally-encapsulating suits, Self-contained Breathing Apparatus, and/or rescue equipment, involves an inherent degree of risk. We wish to minimize those risks under our direct control.

GTRI requires the following procedures to be implemented in those training programs which require the extensive use of extensive Personal Protective Equipment, particularly the **Hazmat Technician Course, HAZWOPER Site Operations Course, Advanced Hazmat School, or Permit-Required Confined Space Rescue Level course.**

- All students must secure medical clearance from a Physician or other Licensed Health Care Professional (PLHCP) prior to (within 12 months) attending a GTRI training program requiring the wearing of totally-encapsulating suits, Self-contained Breathing Apparatus, and/or confined space rescue equipment. This can be waived if your job can be documented as to requiring health and safety training but not the actual use of such equipment, or if you have a mental or physical problem which precludes wearing this equipment (remember, though; if you cannot wear it during training, you cannot wear it on your job). If you do not present medical clearance prior to or at the beginning of the course, you may not be permitted to participate in the exercises requiring encapsulated suits, SCBAs, and/or rescue PPE.
- During the introductory hands-on training the student/instructor ratio is normally between 5:1 and 7:1. During the simulation drills where instructors serve more as referees, this ratio may be somewhat higher. During those exercises which require encapsulated suits and/or SCBAs, you will always be supported by your fellow students, as well as instructors. The same is true for confined space practical training.
- In an emergency you can always get out of an encapsulated suit by yourself. However, instructors and other students will always be close by if you need help; you will never be left alone. You will normally not wear an encapsulated suit for longer than 1 or 2 normal work rotations, be it a demonstration, entry during a drill, or decon line shift. Confined space training will normally entail one entry wearing PPE during practical training and potentially more during drills.
- Field exercises are conducted with consideration given to temperature and weather conditions. However, due to the progressive schedule of the courses, many field exercises are set at a certain time of the curriculum day. Appropriate safety considerations will be taken. We will not go into the field during an electrical storm, and all field activities will come to an immediate halt if such a storm moves through.

- First aid and emergency medical services are available and on-call during all field activities.

## **MEDICAL CLEARANCE**

GTRI provides the medical evaluation form which is to be completed prior to attending your course (see below). This form is to certify you medically-capable of wearing an SCBA, working in totally-encapsulating suits and other rescue equipment, and should be completed by your PLHCP within 12 months prior to attending your course. Any other medical evaluation form shall provide equivalent information as that required by the GTRI form. Any questions concerning health and safety considerations, the medical clearance form or the technical content of the course(s) should be directed to the Director of the Hazardous Materials Training Program, Kevin Kamperman; he can be emailed at [kevin.kamperman@innovate.gatech.edu](mailto:kevin.kamperman@innovate.gatech.edu). All medical information will be kept strictly confidential.

## **HOLD HARMLESS AGREEMENT**

A Hold Harmless Agreement is required by GTRI and the Georgia Institute of Technology (see below). By signing this agreement you are simply acknowledging that there are certain risks inherent to HAZWOPER and confined space training and that outside of gross negligence, you will hold GTRI, its employees, and affiliate instructors not liable. If you have any questions regarding the Hold Harmless Agreement, please direct them to Kevin Kamperman, Director of the Hazardous Materials Training Program; you can email him at [kevin.kamperman@innovate.gatech.edu](mailto:kevin.kamperman@innovate.gatech.edu).

## **REGISTRATION AND ATTENDANCE CONDITIONS**

All forms (Registration, Medical Clearance and Hold Harmless) should be submitted to and preferably received by Georgia Tech at least one day prior to the beginning of your scheduled training; however, you may bring them on the first day of the course. If you fail to submit the Medical Clearance and Hold Harmless forms you may not be permitted to participate in those exercises requiring the wearing of the PPE described above.

As stated in the GTRI attendance policy included in the course notebooks, you must be present for at least 90% of the entire course period and successfully participate in the field exercises. If there is a question of whether you have satisfactorily participated in any of the field exercises, the appropriate instructor(s) will be queried. The Course Director retains final judgment on all matters of eligibility.

### **Please return *all* completed forms to:**

Kevin L. Kamperman, M.S.P.H.  
Director, Hazardous Materials Training Program  
Georgia Tech Research Institute  
Bldg. 1, Room 110  
7220 Richardson Rd.  
Smyrna, GA 30080  
[kevin.kamperman@innovate.gatech.edu](mailto:kevin.kamperman@innovate.gatech.edu)



**GEORGIA TECH ENTERPRISE INNOVATION INSTITUTE  
Hazardous Material Training Program**

**HOLD HARMLESS AGREEMENT**

I, the undersigned, in consideration of my voluntary participation in the Hazardous Material/Confined Space Training course to be held at the Georgia Tech Hazardous Materials Training Center during the dates of \_\_\_\_\_, do hereby agree to hold harmless the Georgia Institute of Technology, Georgia Tech Enterprise Innovation Institute, and any trustee, officer, appointee, agent, contractor or employee of said Institute, and from and against any losses, costs, damages and expenses, including attorney's fees, arising out of or on behalf of any person, for any injury to my person, including death, occurring as the result of my participation in any such activity.

I also acknowledge by my signature that I have read the description of the potential health and safety risks associated with this training attached to this Agreement and that I am participating voluntarily.

I acknowledge that I have discussed my participation in this training with my medical provider, have answered to the best of my knowledge questions asked by that provider concerning my health, and have received a physical examination from said medical provider.

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Signature of Student Date

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Signature of Parent or Guardian if Student is a Minor Date



**TO:** Personal Physician/Medical Provider of Georgia Tech Professional Education Student

**FROM:** Kevin L. Kamperman, M.S.P.H.  
Director, Hazardous Materials Training Program

**SUBJECT:** Medical Evaluation of Patient for HAZWOPER and/or Confined Space Training

Your patient is registered for either a 24-hr or 40-hr training program in either hazardous materials emergency response (hazmat), site remediation, or confined space entry and/or rescue; job training which is required under Federal law (OSHA - 29 CFR 1910.120 and/or .146). This training will include wearing and working in various types of Personal Protective Equipment such as Self-contained Breathing Apparatus, totally-encapsulating suits, or confined space entry and rescue equipment. A medical clearance is required to help minimize the impact of unforeseen health effects which are virtually identical whether under training conditions or real work conditions.

Full protective equipment includes a totally-encapsulating suit which is air- and water-tight, weighing 8-10 lbs, and Self-contained Breathing Apparatus (another 25-30 lbs). Confined space entry and rescue equipment can be the same as above, plus the addition of another 10-plus lbs. of retrieval harnesses, lights, and other rescue equipment and tools. This ensemble may be worn for periods up to 45-60 minutes at a time, and be used in physical activities such as walking, running, moving 55- or 90-gal drums (450-800 lbs), digging ditches, climbing ladders, carrying loaded stretchers or other work equipment and tools, entering vertical or horizontal confined spaces, etc. These activities can take place indoors or outdoors, in hot, cold, and high-noise environments, at elevation or subsurface.

The health and safety risks are varied, but primarily include heat stress and increased demands on the cardiopulmonary and musculoskeletal systems. The respirator will increase inspiratory and expiratory resistance and potential dead spaces. Cardiac demand will also be increased. Heat stress can be brought on by the suit, ambient temperatures and heated expired air. The weight of the various pieces of protective and work equipment can significantly impact the user's back, hips, knees, shoulders, and other joints, especially if the wearer has pre-existing conditions affecting these joints or other parts of the body.

While suited-up, the student will experience reduced visual acuity and auditory muffling. Feelings of sensory deprivation and claustrophobia may also be problems. All of these potential problems are reviewed with the students before suiting-up the first time, and are constantly monitored for during field exercises and practicals.

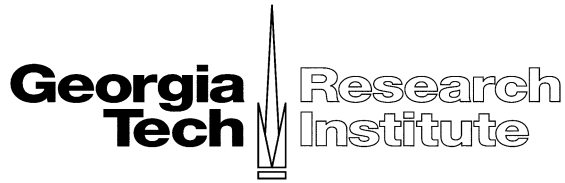
Conditions we believe would exclude a student from working with such Personal Protective Equipment include, but are not limited to: uncontrolled hypertension, heart attack within last 6 months, severe angina pectoris, aortic stenosis, history of spontaneous pneumothorax, moderate or severe pulmonary disease, severe obesity, severe musculoskeletal disease (including arthritis), recent joint replacement, and extremely poor overall physical condition. Significant facial scars, beards, long mustaches, and removal of dentures under **actual** working conditions are all respiratory disqualifiers, as a proper seal cannot be made with the respirator facepiece. These conditions, however, **are** acceptable for training purposes as the student will not be exposed to any hazardous materials.

Please conduct an appropriate physical examination and complete the attached history, review the results with the patient, and either mail the medical clearance forms directly to me at the address below and/or supply the student with a copy for delivery at the beginning of the course. Laboratory studies such as blood gases, pulmonary function, cardiogram and stress testing, etc. are left to your medical discretion. All personal medical information will be held strictly confidential by myself and Georgia Tech.

Thank you for your cooperation. If you have any questions, please do not hesitate to contact me at the address or email below.



Kevin L. Kamperman, M.S.P.H.  
Director, Hazardous Materials Training Program  
Georgia Tech Research Institute  
Bldg. 1, Room 110  
7220 Richardson Rd.  
Smyrna, GA 30080  
[kevin.kamperman@innovate.gatech.edu](mailto:kevin.kamperman@innovate.gatech.edu)



## MEDICAL HISTORY FOR HAZARDOUS MATERIAL/CONFINED SPACE TRAINING

**HISTORY OF:** \_\_\_\_\_  
Name of Patient

Uncontrolled hypertension    Yes \_\_\_\_\_ No \_\_\_\_\_  
Myocardial infarction        Yes \_\_\_\_\_ No \_\_\_\_\_  
Severe angina pectoris        Yes \_\_\_\_\_ No \_\_\_\_\_  
Aortic stenosis                Yes \_\_\_\_\_ No \_\_\_\_\_  
Other cardiac disease         Yes \_\_\_\_\_ No \_\_\_\_\_  
Spontaneous pneumothorax    Yes \_\_\_\_\_ No \_\_\_\_\_  
Joint issues/replacement      Yes \_\_\_\_\_ No \_\_\_\_\_

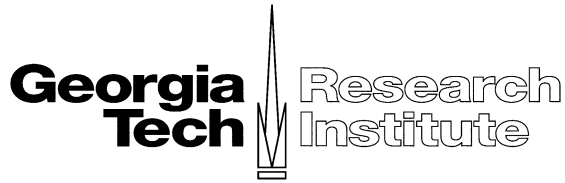
Asthma                            Yes \_\_\_\_\_ No \_\_\_\_\_  
Chronic respiratory disease    Yes \_\_\_\_\_ No \_\_\_\_\_  
Severe musculoskeletal disease Yes \_\_\_\_\_ No \_\_\_\_\_  
Severe obesity                 Yes \_\_\_\_\_ No \_\_\_\_\_  
Phobias to confined spaces    Yes \_\_\_\_\_ No \_\_\_\_\_  
Facial scars                     Yes \_\_\_\_\_ No \_\_\_\_\_

### PHYSICAL EXAMINATION:

Height: \_\_\_\_\_                      Weight: \_\_\_\_\_  
BP:    Systolic: \_\_\_\_\_              Pulse: \_\_\_\_\_  
          Diastolic: \_\_\_\_\_            Respirations: \_\_\_\_\_  
Heart:    Rate: \_\_\_\_\_                Rhythm: \_\_\_\_\_  
          Other: \_\_\_\_\_

Lungs:

Comments:



**MEDICAL CLEARANCE FOR HAZARDOUS MATERIAL/  
CONFINED SPACE TRAINING**

I have examined \_\_\_\_\_ and find him/her medically fit to participate in training programs and work environments such as hazmat emergency response, hazardous waste remediation, and confined space entry and rescue. These types of work efforts require substantial use of Personal Protective Equipment, including respirators, chemical protective suits, and retrieval devices, and subject the user to increased physical and mental demands beyond normal work conditions.

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

Physician's/Medical Provider's Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_