

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Risk Management Procedure</b> 风险管理程序	

### Approval process

#### 审批过程

	<b>Name</b> 姓名	<b>Title</b> 职务
<b>Drafted by</b> 起草人	Xu Guangxiang 许光祥	EHS Officer
<b>Reviewed by</b> 审阅人	Yigal Cohen; Shaogang Chen陈少刚; Sehoon Park;	PVC & General Director; PVC assistant & Safety coordinator; Academy Safety Representative;
<b>Approved by</b> 批准人		Campus Safety Committee;

### Reversion records

#### 版本历史记录

<b>Rev. No.</b> 版本号	<b>Publication date</b> 出版日期	<b>Rev. reason/ content modified</b> 再版原因/更改内容
01	2019-11-01	New file 新建文件
02	2021-11-01	Content updates according to the Ministry of Education's requirements for strengthening laboratory safety in colleges and universities, with updated sections in blue font. 根据教育部关于加强高校实验室安全工作要求进行内容更新，更新部分为蓝色字体内容；
03	2022-07-21	Content updates according to actual lab safety management process, updated with blue font
04	2025-12-01	Regular renew 周期审阅更新

### Relevant departments (select relevant departments with a “√”)

#### 相关部门 (用√勾选相关部门)

Construction Dept. 校园建设部	√	Operation Dept. 校园运营部	√		
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### Relevant documents 相关文件

Guangdong Provincial Office of Emergency Management on the issuance of "Guangdong Provincial Office of Emergency Management on security risk grading and control approach  
广东省应急管理厅关于印发《广东省应急管理厅关于安全风险分级管控办法》

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期：
File name 文件名	Risk Management Procedure 风险管理程序	

**Office of the Guangdong Provincial Education Department on the reporting of major risks announced to the whole society**

广东省教育厅办公室关于报送向全社会公布重大风险情况的通知

**Guangdong Province, the field of safety production risk point hazard source investigation and control work guide**

广东省安全生产领域风险点危险源排查管控工作指南

**Guangdong Provincial Office of Emergency Management on the issuance of "Guangdong Provincial Office of Emergency Management on the grading and control of safety risks (for trial implementation)" notice**

广东省应急管理厅关于印发《广东省应急管理厅关于安全风险分级管控办法（试行）》的通知

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	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Risk Management Procedure</b> 风险管理程序	

## 1.0 Purpose 目的

By identifying potential safety hazards before working, identifying countermeasures to eliminate or mitigate the effects of hidden risks, and guiding the development of relevant safety procedures based on their work content, allowing lab users or operators to avoid injuries or illnesses during their activities and control or avoid potential risks.

通过在活动前发现潜在安全隐患、确定消除或减轻隐患影响的对策，并指导根据安全活动内容制定出相关安全控制措施，让实验或作业人员其在活动过程中避免潜存的伤害或疾病，并控制或避免潜在的危害。

## 2.0 Scope 范围

The provisions of this document apply to all relevant special **experiment**, high-risk **experiment**, and lab activities in GTIIT.

本文件规定适用于广东以色列理工学院所有相关的特殊实验、高危实验和实验室操作等内容。

## 3.0 Responsibilities 职责

EHS office 校园安全办公室

- Develop this procedure and supervise the risk management of various laboratories and departments.  
负责制定此规定，并监督各个实验室和部门的风险管理执行；
- Assist in lab risk management, including: risk identification, risk evaluation and confirm risk control measures.  
协助进行实验室风险管理，包含：风险辨识、风险评价和风险控制措施的落实确认。

PI and on-site Programs Safety Representative 实验室负责人及学科在校安全代表：

- Responsible for risk assessment and experiment safety approval of labs activities.  
负责实验室相关活动进行风险评估及实验安全批准；
- Responsible for the implementation of relevant experimental risk control measures.  
负责相关实验风险控制措施的有效落实；

Campus Construction Department 校园建设部

- Assist labs and other departments to lead the construction project management.  
协助实验室和其他部门负责相应建设项目的管理。

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Risk Management Procedure</b> 风险管理程序	

- Assist labs and other departments to implement the safety control measures during construction projects.

协助实验室和其他部门负责相应建设项目中安全控制措施的有效落实。

Other relevant Departments 相关部门负责人

- Responsible for the identification, assessment and follow-up of safety control measures related to the department's operations, and develop standard safety operation guidelines.  
负责与部门作业相关的安全危害的识别，评估和安全控制措施跟进，并制定标准的安全操作指引。
- Responsible for their own lab or department annual safety review and training of work hazard analysis.  
负责各自相关实验室或部门内部工作的危害分析年度回顾与培训。
- Responsible for evaluating and summarizing project requirement and safety controls measures for renovation and new construction projects. If need EHS support safety evaluations, department can ask for support from the campus EHS Office.  
负责部门的改造、新建项目中项目需求以及安全控制措施进行评估和汇总，如需校安全办公室协助进行安全评价，则可以寻求其协助。

#### 4.0 Terminology 术语

**Experiment Hazard Analysis:** it is a preventive tool that analyze the protential risk behind these experimental works labs will do, and develop relevant control measure to eliminate or mitigate the protential hazard to the acceptable level.

**实验危害分析：**是一种事故的预防工具，通过事先或定期地对某项实验操作进行安全、职业健康、消防、环保等因素的分析，发现潜在的危害因素，采取措施，以消除或最大限度地减少事故的发生。

**Safety risk grading:** A semi-quantitative method (risk matrix method) is used to determine different risk levels and carry out grading control based on the product of the likelihood of accidents and the severity of consequences.

**安全风险分级：**采用半定量方法（风险矩阵法），根据事故发生的可能性和后果严重性的乘积确定不同的风险等级并进行分级管控。

**Lab PI:** Lab Principle Investigator 首席研究员

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期:
<b>File name</b> 文件名	<b>Risk Management Procedure</b> 风险管理程序	

## 5.0 Flow 流程

### 5.1 The scope of the risk assessment includes: 风险评价范围包括:

- 1) Laboratory routine and non-routine activities;  
实验室内常规和非常规活动;
- 2) Potential process safety, health and environmental risk and related potential anomalies or emergencies;  
潜在的工艺安全、健康卫生和环境事故及相关的潜在异常或紧急情况;
- 3) Storage, transportation, use and disposal of experimental materials;  
实验材料储存、运输、使用和废弃过程;
- 4) Facilities, equipment and personal safety protection supplies used during the experiment;  
实验过程使用的设施、设备、个人安全防护用品;
- 5) Lab experimental condition and environment;  
实验室操作环境;
- 6) New construction, alteration and expansion of laboratories.  
新改扩建实验室。

## 5.2 Evaluation method and selection 评价方法及选用

### 5.2.1 Common evaluation methods 常用的评价方法

According to the needs, choose scientific, effective and feasible risk assessment methods. Common evaluation methods are:

根据需要，选择科学、有效、可行的风险评价方法。常用的评价方法有：

1. 工作危害分析 (Job Hazard Analysis, JHA)
2. 风险矩阵法 (Risk Matrix,  $R=LS$ )
3. 预危险性分析 (Process Hazard Analysis, PHA)
4. 危险与可操作性分析 (Hazard and Operability Analysis, HAZOP)
5. 失效模式与影响分析 (Failure Mode and Effects Analysis, FMEA)
6. 最低合理可行 (As Low As Reasonably Practicable, ALARP)

### 5.2.2 Method Selection 方法选择

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期：
File name 文件名	Risk Management Procedure 风险管理程序	

- Labs experimental activities are evaluated using the Risk Matrix method. Risk assessment and control of important experiments will use the Experimental Hazard Analysis.  
实验室活动采用风险矩阵法进行评价，重要实验通过“实验危害分析”进行风险评估和控制；
- The hazardous process is evaluated using the HAZOP method;  
危险性工艺采用HAZOP法进行评价；
- In other cases, different methods can be selected for evaluation as needed.  
其它情形，可视需要选择不同的方法进行评价。

### 5.3 Evaluation Criteria 评价准则

Develop risk assessment guidelines based on the following:

依据以下内容制定风险评价准则：

- 1) Relevant production safety laws and regulations;  
有关安全生产法律、法规；
- 2) Experimental safety design requirements;  
实验安全设计要求；
- 3) Laboratory safety management standards;  
实验室安全管理标准；
- 4) School safety regulations and standards.  
学校安全规章制度和标准。

Based on the actual situation, school has formulated evaluation criteria that meet the requirements of relevant standards and specifications, and include safety, health, environment, probability of occurrence of security events, severity, and risk levels.

学校根据实际情况制定了符合有关标准规范规定且包括影响安全、健康、环境、安防事件发生可能性、严重性的取值标准以及风险等级的评价准则。

For the evaluation requirements and classification of risk assessment, and the control measures corresponding to relevant levels, please refer to the specific requirements in Annex 1: Risk Assessment Form.

风险评估的评价要求和等级划分，以及相关等级对应的控制措施要求，请详见附件1：《风险评估汇总表 Risk Assessment Form》的具体要求。

### 5.4 Evaluation participation 评价的参与

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Risk Management Procedure</b> 风险管理程序	

Managers at all levels of the laboratory must participate in work-related risk assessments.

实验室各级管理人员必须参与工作有关的风险评价工作。

The lab risk assessment shall be attended by the person in charge of the laboratory;

实验室评价组织应有实验室负责人参加；

Encourage lab managers or tutors to actively participate in lab risk assessment and control.

鼓励实验室教员积极参与实验室风险评价和控制。

### 5.5 Timing and frequency of evaluations 评价的时机和频次

When the following changes occur in the laboratory, a risk assessment should be performed in a timely manner.

实验室发生以下变更时，应及时进行风险评价。

- Before new experiments  
新的实验产生前；
- Before experimental operating conditions change or process changes;  
实验操作条件变化或工艺改变前；
- Before new major experimental equipment is put into use;  
新的重大实验设备投入使用前；
- When the laboratory management organization readjusts (replaces the lab manager, PI or [on-site Programs Safety Representative](#)).  
实验室管理机构发生重调整时（更换实验室负责人、首席研究员或[学科在校安全代表](#)）。

### 5.6 Implementation of evaluation 评价的实施

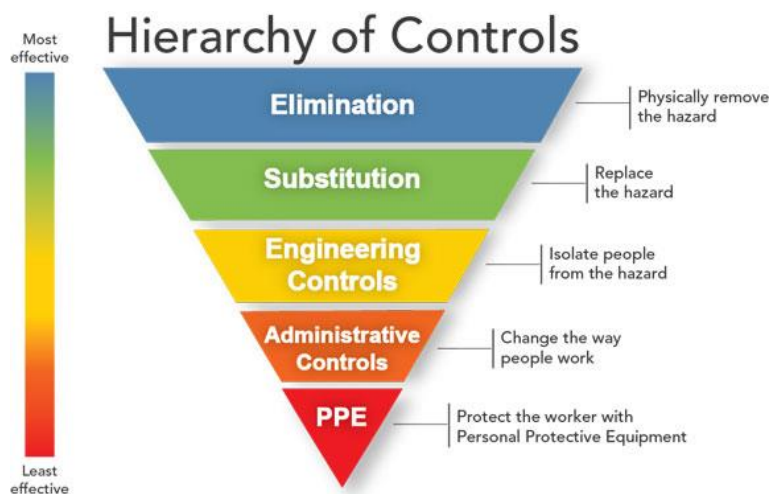
- Establish a list of experiment and equipment, facilities;  
建立实验活动清单和设备、设施清单；
- Carry out identification of dangerous and harmful factors and risk assessment according to the prescribed frequency and timing;  
根据规定的频次和时机，开展危险、有害因素辨识、风险评价；
- According to the results of risk assessment and the operation of the operation, determine unacceptable risks, formulate and implement control measures, and control risks, especially major risks, to an acceptable level.

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Risk Management Procedure</b> 风险管理程序	

根据风险评价结果及经营运行情况等，确定不可接受的风险，制定并落实控制措施，将风险尤其是重大风险控制在可以接受的程度。

- When selecting risk control measures, consideration should be given to feasibility, safety, and reliability, including: elimination, substitution, engineering and technical measures control, management and training and education measures, and individual protection measures. (See Figure 5-1).

选择风险控制措施时，应考虑可行性、安全性、可靠性，应包括：消除、替代、工程技术措施控制、管理和培训教育措施，以及个体防护措施等风险控制层级要求（风险控制层级内容请参见图5-1）。





	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Risk Management Procedure</b> 风险管理程序	

图5-1控制层级（Figure 5-1 Control level）

## 6.7 Risk control 风险控制

It shall be subject to hierarchical consideration. Priority shall be given to high level control modes, for instance, decreasing progressively from 1 to 5.

对于风险控制需要进行层级考虑，优先考虑高级别的控制方式，如从1-5逐层递减。

Before using new chemicals (when relevant departments cooperate to finish new material introduction application and registration), it needs to consider whether non-toxic and harmless process or chemicals can be used for production.

在使用新的化学品前(各相关部门协同完成引进新物料申请和登记时)，需考虑是否可以使用无毒无害的工艺或化学品进行实验，但这必须在确保可实现实验或试验结果的情况下(理工科试验就是探知未知，尝试用新的方法来实现或探知理论结果)；

If the above requirement cannot be realized, low toxicity or harmless and acceptable process or chemicals can be used to replace the original high-toxicity or harmful process or chemicals for production.

如果无法实现上一要求，则考虑使用低毒或无害、可以接受的工艺或化学品来替代原有高毒或者有害进行生产；

If the above requirement cannot be realized, engineering control means (such as handle in fume hood or automatic control) shall be used to eliminate the probability of personal contact hazard factors.

如果无法实现上一要求，则考虑使用工程控制手段，如：通风橱内操作，或自动化控制，消除人员接触危害因素的可能；

If the above requirement cannot be realized, the management procedure can be used to control, so as to reduce the personal contact time or relieve the probability, and lower the degree or probability and time of personal exposure in the hazard factors. At the same time, the operator or the contactor shall be provided with proper PPE, making sure that the personal contact hazard factors are within an acceptable range.

如果无法实现上一要求，则需考虑通过管理程序控制，从而降低人员接触时间，或者解除几率，减少对人员暴露在危害因素中的程度或几率、时间等等，同时需要为操作人员或接触者配备合适的PPE，确保人员接触的危害因素是在可接受范围之内。

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Risk Management Procedure</b> 风险管理程序	

After completing the control measures, the level of the original medium and high-risk factors needs to be reevaluated, and update all relevant control measures and information in record.

完成控制措施后，需要对原中高风险因素的风险等级进行重新评估，并在风险管理表格中更新相关信息。

## 6.8 List of significant risks and assessment 重大风险清单及评估

- Establish a list of major risks based on the results of the risk assessment, contains but not limited to the following below factors: flammable or explosive gas, controlled chemicals, BSL2 or above this level biological infection experiments, and radiation-containing substance experiments;  
根据风险评价的结果，建立重大风险清单，包含但不限于以下内容，如涉及易燃易爆气体、管制类化学品实验、BSL2或以上生物感染类实验、含辐射类物质实验等；
- Based on the actual situation, determine priorities, formulate measures to mitigate risks, and control risks to an acceptable level;  
结合实际情况，确定优先顺序，制定措施消减风险，将风险控制在可以接受的程度；
- When an accident or major attempt occurs in the school, the risk assessment summary table should be checked in a timely manner to ensure that the risks have been identified and effectively controlled, and relevant control measures should be updated in a timely manner;  
当校内发生事故或重大未遂事故时，应及时检查风险评估汇总表，确保风险已经识别和有效控制，并及时更新相关的控制措施；
- If there is not accident or major cases occurred in campus, the review period of this procedure and evaluation form is two years;  
如校内未发生事故或重大未遂事故，该程序和评估表的审核周期为两年；
- Upon completion of the annual or interim assessment, each laboratory risk assessment form must be communicated to the laboratory or department head.  
完成年度评估或临时评估后，各实验室风险评估表必须告知实验室或部门负责人。

## 6.9 Training 培训

- Train the experimenters with the results of the risk assessment and the control measures taken to make them familiar with the dangers and harmful factors in the operating environment, and master and implement the corresponding control measures.  
将风险评价的结果及所采取的控制措施对实验人员进行培训，使其熟悉操作环境中存在的危险、有害因素，掌握、并落实相应控制措施。

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_02 文件编号：
		Rev. No.: 04 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Risk Management Procedure</b> 风险管理程序	

- Training includes new lab entry, transfer of trainers, and student refresher training of mandatory training for accessing lab at least one time per year.

培训包括实验室新入职、转岗教员，以及学生每年至少一次实验室准入安全更新培训。

- The content of the training for each lab staff's position shall be determined by the lab PI or Lab manager based on the content of the training matrix in their job involvement and training and education procedures.

And ensure that the person passes the training and testing in a timely manner.

实验室各岗位培训内容应由实验室首席研究员或实验室负责人根据其工作涉及内容和培训教育程序中的培训矩阵内容确定，并确保该人员及时通过培训和测试。

## 6.0 Annex 附件

1. Risk assessment form 校内风险评估表

2. Flowchart of Lab Safety Management 实验室安全管理流程图