

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_01 文件编号：
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File name 文件名	<b>Lab Experiment Hazard Analysis</b> <b>实验危害分析</b>	

### Approval process

#### 审批过程

	Name 姓名	Title 职务
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<b>Approved by</b> 批准人		Campus Safety Committee;

### Reversion records

#### 版本历史记录

Rev. No. 版本号	Publication date 出版日期	Rev. reason/ content modified 再版原因/更改内容
01	2019-11-01	New file 新建文件
02	2021-08-06	Two-year review and update 年度复审及更新
03	2025-12-01	Update based on actual process adjustments

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

#### 相关部门 (用√勾选相关部门)

No 无

### Relevant documents 相关文件

No 无

### Distribution mode (black) 发放方式 (涂黑)

Electronic edition ☒ Paper edition ☐  
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## 1.0 Purpose 目的

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

通过在工作前找出安全隐患、确定消除或减轻隐患影响的对策，并指导根据其工作内容制定出相关安全操作流程，让作业人员避免其在操作过程中存在的伤害或疾病，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, high-risk experimental activities, and laboratory experiment of the 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、高危实验活动和实验室操作等内容。

## 3.0 Responsibilities 职责

3.1 Relevant labs are responsible for the identification, assessment and follow-up of safety control measures related to the lab's operations, and develop standard safety operation guidelines.

各相关实验室负责与其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。

3.2 Relevantlabs are responsible for the annual review and training of work hazard analysis within the department. If there are any majoy change about the lab PI or experiment content, it is necessary to do the EHA again.

各实验室负责其内部岗位的工作危害分析年度回顾与培训。若实验室负责人或者实验相关内容发生重大变化，需重新进行风险评估。

## 4.0 Terminology 术语

**Experiment Hazard Analysis:** It is a preventive tool that analyze the protential risk behind the experiment and develop relevant control measure to eliminate or mitigate the protential hazard to the level we can accept.

**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。

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_01 文件编号：
		Rev. No.: 03 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Lab Experiment Hazard Analysis</b> 实验危害分析	

Major hazard sources: the items explicitly identified as important hazards in the Higher Education Laboratory Safety Inspection Checklist.

重要危险源：“高等学校实验室安全检查项目表”中明确的重要危险源内容。

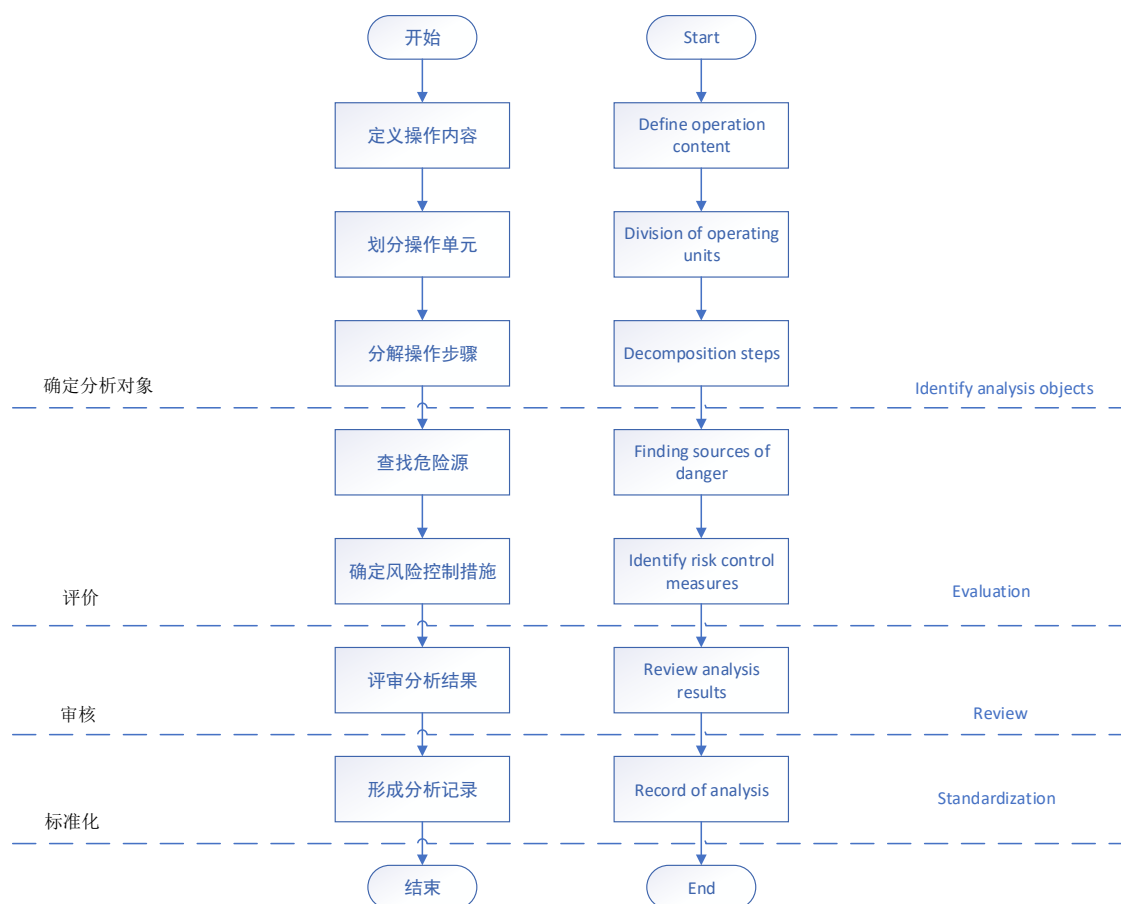
Laboratory hazards and risks can be managed using **RAMP**, including: **R**ecognize hazards, **A**ssess risks, **M**inimize risks, and **P**repare for emergencies.

实验室危害和风险可以使用 **RAMP** 进行管理, 其中包含：识别危险，评估风险，降低风险，以及为紧急情况做好准备。

## 5.0 Flow 流程

### 5.1 Experiment hazard analysis flowchart

实验危害评估分析流程图



	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_01 文件编号：
		Rev. No.: 03 版本号：
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<b>File name</b> 文件名	<b>Lab Experiment Hazard Analysis</b> <b>实验危害分析</b>	

## 5.2 Identify analysis objects 确定分析对象

### 5.2.1 Define experiment content or analysis object 定义操作内容或分析对象

Work content inside the lab include but not limited to, the following:

实验室内的的工作包括，但不仅限于以下范围：

- Preparation before experiment/project, such as storage and receive of dangerous chemicals, operation/experiment area, etc.  
实验前准备，例如危险化学品的储存和领用,实验的地点区域等。
- During experiment, such as the operation way, side effects from experiment reaction, chemicals spill emergency, etc.  
实验进行，例如实验操作，实验反应可能产生的现象，化学品泄漏应急等。
- After the experiment, such as the handle and temporary storage of the hazard waste, etc.  
实验结束后，例如危险废弃物的处理和暂存等。

The definition of operation should be based on the actual situation of the site and choose a method that is convenient for analysis.

操作的定义应根据现场实际情况，选择便于分析的方式。

### 5.2.2 Gather information about experimental activities 收集实验活动相关信息

Collect the following information as evidence for a security analysis, including but not limit to the following:

收集以下信息，作为安全分析的证据，包括但不限于：

- Exposure to existing energy  
接触存在的能量；
- Operating equipment, facilities, tools, etc.  
操作的设备、设施、工具等；
- Contact with materials  
接触物料；
- Operating environment: site, operating space  
操作环境：场地、操作空间；
- Emergency facilities and equipment  
应急设施、设备；
- Health protection facilities and equipment

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_01 文件编号：
		Rev. No.: 03 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Lab Experiment Hazard Analysis</b> 实验危害分析	

健康防护设施、设备；

- Personal protection, etc.  
个人防护等。

### 5.2.3 Division of operating units 划分操作单元

- If a single operation that covers a large area, it can be separated into multiple tasks, each operation consisting of different steps. Too many quantities are not conducive to analysis, and each work should be divided into 2-5 operating steps.

如涉及一次性操作涵盖范围较大，可分解成多个单独的工作，每个操作由不同步骤组成。数量太多，不利于分析，宜将每个工作划分成2-5个操作单元。

- If the scope of the operation is appropriate, the decomposition operation steps can be directly performed.

如操作涵盖范围合适，可以直接进行分解操作步骤。

### 5.2.4 Decomposition steps 分解实验步骤

Note the following 应注意以下事项：

- Each step contains as many actions as possible;  
每一个步骤尽可能只含一个动作；
- The decomposed steps should not be too complicated, generally no more than 10 steps;  
分解出来的步骤不要太复杂，一般不超过10个步骤；
- The language of description should be easy to understand and not too professional or terminological;  
描述的语言要通俗易懂，不能太专业或术语化；
- Concerned about the operation actions, status, environment, clear words;  
关注的是操作动作、状态、环境，用词简单明了；
- Be sure to list all the steps you take to complete this operation, some steps may not be performed every time, but as long as this step is part of the work, it should be listed.  
应列出完成此项操作所经过的所有步骤，有些步骤可能不是每次都要进行，但是只要这一步骤是该项工作的一部分，就应该将其列出。

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_01 文件编号：
		Rev. No.: 03 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Lab Experiment Hazard Analysis</b> <b>实验危害分析</b>	

### 5.3 Analysis 分析

#### 5.3.1 Finding sources of danger 查找危险源

- According to "Classification and Code of Dangerous and Harmful Factors in Production Process" to find the source of danger from physical, chemical, biological, physiological, behavioral and other six types of dangerous and harmful factors  
按《生产过程危险和有害因素分类和代码》从物理、化学、生物、生理、行为及其它六类危险和有害因素来查找危险源；
- Organize laboratory instructors or employees with practical experience to find sources of danger.  
组织有实践经验的实验室教员或员工，查找危险源。
- For key risk source, the EHA is mandatory, which is required to report to EHS office.  
对于重要危险源，危害分析为必须，且需提交EHS办公室备案。

#### 5.3.2 Identify risk control measures 确定风险控制措施

When determining controls or considering changes to existing controls, consider reducing risk in the following order:

在确定控制措施时，或考虑改变现有的控制措施时，应根据下列顺序考虑降低风险：

- eliminate;(which is the best way to control the risk)  
消除(为最佳的首选手段)；
- Substitute  
替代；
- engineering control  
工程控制；
- Identification / warning and / safety guidance control  
标识/警告和/安全操作指引控制；
- Personal protective equipment  
个人防护器具；
- Emergency measures  
应急措施。

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_01 文件编号：
		Rev. No.: 03 版本号：
		Effective date: 2025-12-01 生效日期:
File name 文件名	<b>Lab Experiment Hazard Analysis</b> <b>实验危害分析</b>	

#### 5.4 Review 评审

After the risk control measures are determined, they need to be reviewed. The review includes the following aspects:

确定风险控制措施后，应予以评审，评审包括以下方面：

- Whether the control measures reduce the risk to an allowable level;  
控制措施是否使风险降至可容许水平；
- Whether control measures have created new sources of danger;  
控制措施是否产生了新的危险源；
- The necessity and practicability of control measures.  
控制措施的必要性和实用性。

#### 5.5 Implement 实施

5.5.1 Set up a experiment hazard analysis team. The team leader is a lab instructor or safety leader. The team members include but are not limited to the following:

成立工作危害分析小组，组长为实验室教员或安全负责人，组员包括但不限于以下人员：

- Laboratory staff  
实验室操作人员；
- Laboratory safety officer  
实验室安全协调员；
- If equipment is involved, professionals such as mechanical engineers or electrical engineers of the corresponding equipment can be invited.  
如涉及设备则可邀请相应设备的机械工程师、或电气工程师等专业人员。

5.5.2 The person in charge of the lab is responsible for collecting post experiment information according to the requirements of "5.2.2".


实验室负责人负责根据“5.2.2”的要求收集实验操作信息。

5.5.3 The team leader convened team members to hold a experiment hazard analysis meeting and fill out the Experiment Hazard Analysis Form.

组长召集组员开工作危害分析会议，并填写《实验危害分析表》。

5.5.4 The review team held a review meeting and Provide evaluation comments.

评审小组召开评审会议，提出评审意见。

	<b>GTIIT_EHS_ISO file</b>	File No.: GTIIT_EHS_02_01 文件编号：
		Rev. No.: 03 版本号：
		Effective date: 2025-12-01 生效日期：
<b>File name</b> 文件名	<b>Lab Experiment Hazard Analysis</b> <b>实验危害分析</b>	

5.5.5 The experiment hazard analysis team revises the Experiment Hazard Analysis Record Form based on the review comments and submits it to the lab PI for approval. For mid level risk or above, the EHA is required to be submitted to EHS office and program head (or onsite program safety representative) for review.

实验危害分析小组根据评审意见，修改《实验危害分析记录表》，并交由实验室负责人批准，涉及中高风险实验需提交EHS办公室和系主任(系在校安全代表)审核，通过审核后，实验方可开展。

## 5.6 Regular review and update 定期回顾与更新

- Experiment Hazard Analysis in the lab is valid for one year and need to be reviewed at least once a year.  
实验室危害评估记录有效期1年，每年至少回顾一次。
- When relevant incidents occur in the laboratory, the laboratory hazard assessment records should be updated based on the incident investigation results.  
实验室发生相应的事件时，应根据事件调查结果更新实验危害评估记录。

## 5.7 Training 培训

- New laboratory personnel should be trained to master relevant job hazard analysis requirements before conducting experiments or starting employment.  
新实验人员进行实验前或入职前，应培训其掌握相关的工作危害分析要求。
- The laboratory conducts annual refresher training on hazard analysis requirements for experiment-related operations.  
实验室每年进行一次实验相关操作危害分析要求回顾培训。
- After the Experimental Hazard Analysis Form updated, the personnel involved should be organized for training.  
《实验危害分析表》更新后，应组织涉及的人员进行培训。

## 6.0 Annex 附件

### 1. Experimental Hazard Analysis 实验危害分析表