



Guangdong Technion

Israel Institute of Technology

广东以色列理工学院

Strict Controlled Chemicals Management

管制类化学品管理

2023-12-26

R R I S K K



What is the problem?



What is the problem?



What is the problem?



What is the problem?



| No. | Date | Personnel | Equipment | Material | Method | Result | Remarks | Signature |
|-----|------------|-----------|-----------|----------|--------|--------|---------|-----------|
| 1 | 2015.11.10 | 李华 | ... | ... | ... | ... | ... | ... |
| 2 | 2015.11.11 | 王明 | ... | ... | ... | ... | ... | ... |
| 3 | 2015.11.12 | 张强 | ... | ... | ... | ... | ... | ... |
| 4 | 2015.11.13 | 刘伟 | ... | ... | ... | ... | ... | ... |
| 5 | 2015.11.14 | 陈宇 | ... | ... | ... | ... | ... | ... |
| 6 | 2015.11.15 | 赵磊 | ... | ... | ... | ... | ... | ... |
| 7 | 2015.11.16 | 孙昊 | ... | ... | ... | ... | ... | ... |
| 8 | 2015.11.17 | 周鑫 | ... | ... | ... | ... | ... | ... |
| 9 | 2015.11.18 | 吴昊 | ... | ... | ... | ... | ... | ... |
| 10 | 2015.11.19 | 郑宇 | ... | ... | ... | ... | ... | ... |
| 11 | 2015.11.20 | 李华 | ... | ... | ... | ... | ... | ... |
| 12 | 2015.11.21 | 王明 | ... | ... | ... | ... | ... | ... |
| 13 | 2015.11.22 | 张强 | ... | ... | ... | ... | ... | ... |
| 14 | 2015.11.23 | 刘伟 | ... | ... | ... | ... | ... | ... |
| 15 | 2015.11.24 | 陈宇 | ... | ... | ... | ... | ... | ... |
| 16 | 2015.11.25 | 赵磊 | ... | ... | ... | ... | ... | ... |
| 17 | 2015.11.26 | 孙昊 | ... | ... | ... | ... | ... | ... |
| 18 | 2015.11.27 | 周鑫 | ... | ... | ... | ... | ... | ... |
| 19 | 2015.11.28 | 吴昊 | ... | ... | ... | ... | ... | ... |
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REGULATIONS



Ethics



Conpliance



Regulations



Policies



Standards



Law



Relevant laws and regulations for the management of controlled chemicals

| No. | Regulation name |
|-----|--|
| 1 | Hazardous chemicals catalog (including highly toxic chemicals) 危险化学品目录 (2018版) |
| 2 | List of explosive chemicals 易制爆危险化学品名录2017 |
| 3 | Classification and variety catalogue of precursor chemicals 2017 易制毒化学品的分类和品种目录 |
| 4 | Regulation on the Administration of Precursor Chemicals 易制毒化学品管理条例 (2018年修订) |
| 5 | General rule for classification and hazard communication of chemicals 化学品分类和危险性公示通则 (gb13690-2009) |
| 6 | Specifications for storage and preservation of combustible and explosive goods 易燃易爆性商品储存养护技术条件 (GB 17914-2013) |
| 7 | Specifications for storage and preservation of toxic goods 毒害性商品储存养护技术条件 (GB 17916-2013) |
| 8 | Specifications for storage and preservation of corrosive goods 腐蚀性商品储存养护技术条件 (GB 17915-2013) |
| 9 | Safety management technical rules for dangerous chemicals used in labs 实验室危险化学品安全管理规范第2部分: 普通高等学校 |
| 10 | Safety data sheet for chemical products-Content and order of sections 化学品安全技术说明书 内容和项目顺序 GB T 16483-2008 |
| 11 | Measures for the Implementation of the Permits for the Safe Use of Hazardous Chemicals 危险化学品安全使用许可实施办法 (2017年修订) |
| 12 | Catalogue of Industries Applicable to Safe Use of Hazardous Chemicals 危险化学品安全使用许可适用行业目录2013-02-21 |
| 13 | Safety code for construction and storage of dangerous chemicals warehouse 危险化学品仓库建设及储存安全规范 (DB 11755-2010) |
| 14 | Measures for the Safety Supervision and Administration of Hazardous Chemical Construction Projects 危险化学品建设项目安全监督管理办法 (2015年修订) |
| 15 | Personal acceptable risk standards and social acceptable risk standards for hazardous chemical production and storage devices (for trial implementation) 危险化学品生产、储存装置个人可接受风险标准和社会可接受风险标准(试行) |
| 16 | Measures for the Administration of Safety Licensing for Radioisotopes and Radiation Devices 放射性同位素与射线装置安全许可管理办法 (2017年修订) |
| 17 | Regulations on the Safety and Protection of Radioisotopes and Radiation Devices (2019 Revision PKULAW Version) 放射性同位素与射线装置安全和防护条例 (2019年修订) |
| 18 | |

Controlled chemicals management process



A magnifying glass is held over a background of a sunset or sunrise over water. The lens of the magnifying glass is focused on the words "IDENTIFY" and "RISK". The word "IDENTIFY" is written in white block letters on a horizontal row, with the letter "I" highlighted in blue. The word "RISK" is written in white block letters on a vertical row, with the letter "R" highlighted in blue. The magnifying glass has a black handle and a silver-colored frame.

I D E N T I F Y
R
S
K

Strict Controlled Chemical Safety Management

Full lifecycle management:

Prevent or minimize potential exposure time and frequency to hazardous materials.



1. Evaluate the potential risks at process
2. Control the potential risks and ensure appropriate safety controls in place.

Classification & Definition of Strict Controlled Chemicals

1. Precursor Chemicals 易制毒化学品:

Regulations on the Administration of Precursor Chemicals (Amended by Order No. 445 of The State Council, 2018) Classification and variety catalogue of non-medical precursor chemicals

2. Explosive Chemicals 易制爆化学品:

List of Explosive Hazardous Chemicals 2017

3. Highly Toxic Chemicals 剧毒化学品:

List of Hazardous Chemicals (Listed as highly toxic chemicals in the 2015 edition)



Precursor Chemicals

Precursor chemicals - refers to the substances regulated by the state can be used to produce **drugs, raw materials and additives.**

Identification basis: *“Classification and Catalogue of Precursor Chemicals” & Supplementary Catalogue Announced by the State Council.*

Management: *Regulations on the Administration of Precursor Chemicals (Order No. 445 of the State Council, revised in 2018).*

Example in precursor chemicals:

- Toluene, Acetone, Ether, CHCl_3
- $\text{C}_4\text{H}_8\text{O}$, KMnO_4
- H_2SO_4 , HCl , $\text{C}_4\text{H}_6\text{O}_3$, Bromine.



Precursor Chemicals

There are 38 substances in 3 categories of precursor chemicals

Category I

1. 1-phenyl-2-propanone
2. 3,4-methylenedioxyphenyl-2-propanone
3. Piperonal
4. Jaundice
5. Astragalus oil
6. Isoflavone
7. N-acetylanthranilic acid
8. Anthranilic acid
9. Lycopene
10. Ergotamine
11. Ergometrine
12. Ephedrine, pseudoephedrine, racemic ephedrine and other ephedrine substances
13. Hydroxyimine
14. 1-phenyl-2-bromo-1-propanone
15. 3-oxo-2-phenylbutyronitrile
16. O-chlorophenylcyclopentanone
17. N-phenethyl-4-piperidone
18. 4-anilino-N-phenethylpiperidine
19. N-methyl-1-phenyl-1-chloro-2-propylamine

Category II

1. Phenylacetic acid
2. Acetic anhydride
3. Chloromethane
4. Ether
5. Piperidine
6. Bromine[3]
7. 1-phenyl-1-acetone
8. α -Phenylacetoacetic acid methyl ester (Added in 2021)
9. α -acetoacetanilide (Added in 2021)
10. 3,4-methylenedioxyphenyl-2-propanone glycidic acid (Added in 2021)
11. 3,4-Methylenedioxyphenyl-2-propanone glycidyl ester (Added in 2021)

Category III

1. Toluene
2. acetone
3. Methyl ethyl ketone
4. potassium permanganate
5. sulfuric acid
6. hydrochloric acid
7. Phenylacetone nitrile (Added in 2021)
8. γ -Butyrolactone (Added in 2021)



Explosive Chemicals

Explosive chemicals - can be used to make explosives that are strictly controlled by the public security department.

Identification basis: *List of Explosive Dangerous Chemicals* (2017 Edition)

1. Acids--3
2. Nitrates--11
3. Chlorates--3
4. Perchlorates--4
5. Dichromates--4
6. Peroxides and superoxides--15
7. Flammables reducing agent--16
8. Nitro compounds--11
9. Others--7



Highly Toxic Chemicals

Highly toxic chemicals:

1. synthetic chemicals and their mixtures, and natural toxins.
2. that are acutely toxic and likely to pose a public hazard

There are 148 chemicals listed as "highly toxic" in the 2015 edition of the Hazardous Chemicals List



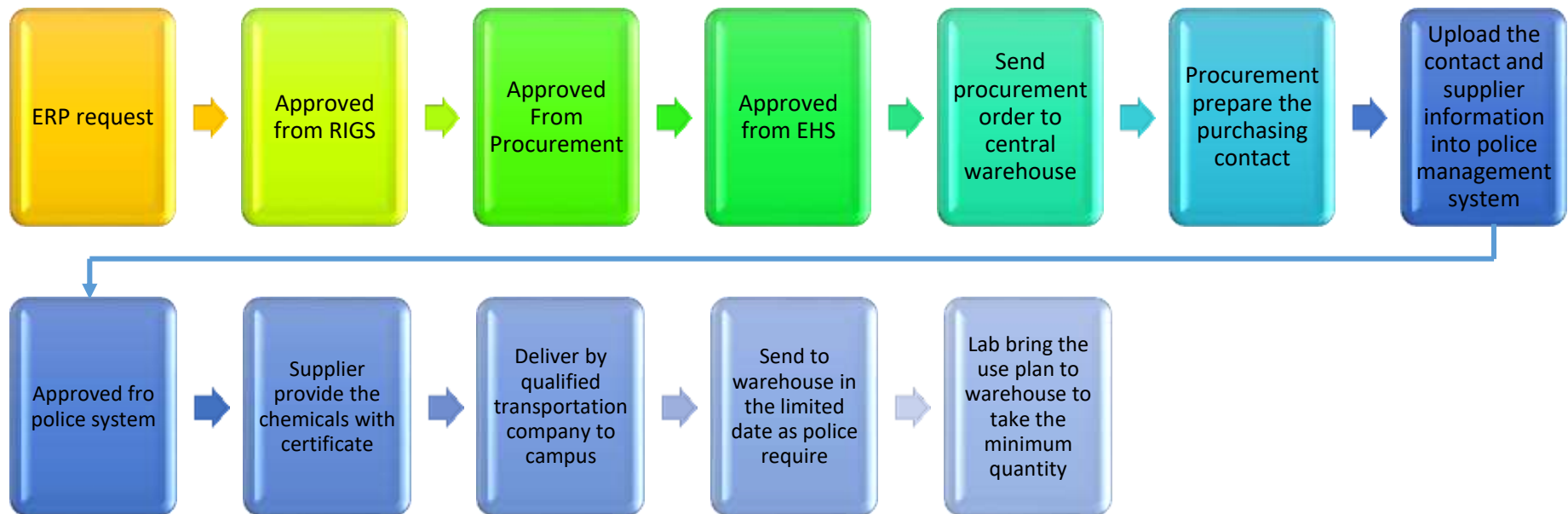
Remark:

Lab must complete the following steps before applying for purchasing of controlled chemicals (highly toxic chemicals) :

1. Complete the MoC application to confirm that this highly-toxic substances is the only material for the experiment, and the MoC must be approved by the Program head.
2. The storage and use area must be covered with CCTV, and the signal is connected to the central control room
3. Before purchasing, experimental hazard analysis EHA must be in place, and pass the EHS on-site review
4. Confirmed the types of experimental waste with EHS for its waste disposal method

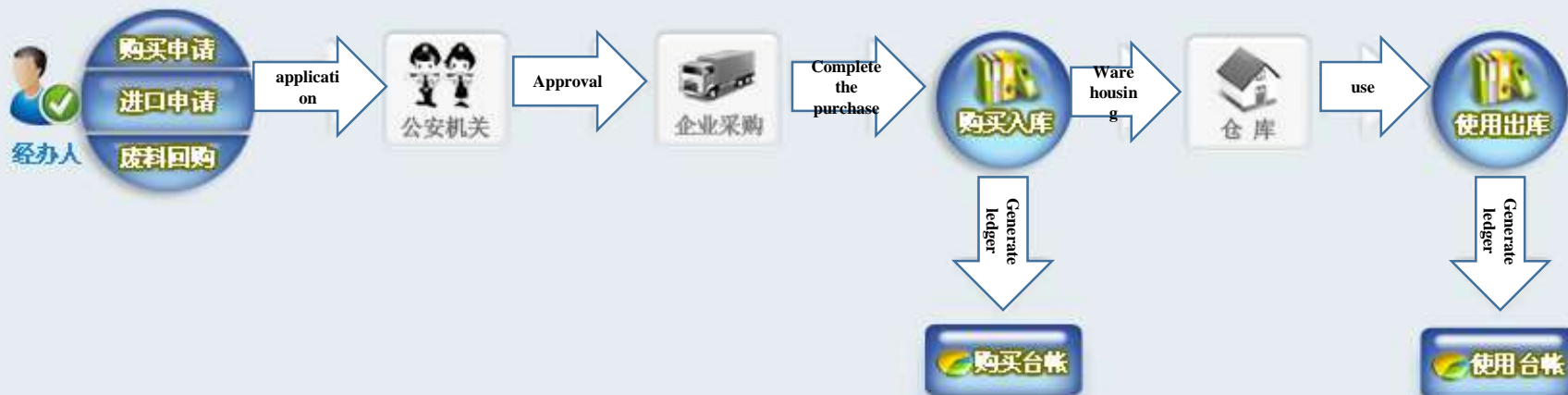
Purchase process:

Controlled chemicals must be purchased
through our central warehouse!



Purchase process:

Business process of purchasing precursor chemicals



The purchase of controlled chemicals must be approved by the public security before purchasing!

Applications for the purchase of pharmaceutical precursor chemicals in the 1st category shall be approved by the drug supervision department of the provincial government.

Purchasing the 2nd & 3rd category of precursor chemicals shall apply to municipal public security organ before purchasing.

Purchase process:

The stamped purchase record must be sent back to the user of precursor chemicals.



非药品类易制毒化学品经营备案证明

编号：(蒙)3J15010300004 品种类别：非药品类易制毒第三类

单位名称：内蒙古亚欣环境工程技术有限公司 经营品种：硫酸、盐酸***

经济类型：有限公司

主要负责人：兰桂荣 主要流向：省内、省外

单位地址：内蒙古自治区呼和浩特市新城区成吉思汗大街大学生创业园8号楼四层4016号

发证机关：呼和浩特市新城区安全生产监督管理局
2018年十二月七日
国家安全监管总局监制

有效期：自二〇一八年十二月七日至二〇一九年十二月六日

第二类、第三类易制毒化学品购买备案证明

证书号：450722GB18000048 校验码：2130603120011374618000048
公文号：钦浦公禁易[2018]年第200048号

| | | | | |
|---|-----------------|----------------|------------|-------------|
| 购买单位 或 个人 | 名称/姓名 (单位公章) | 浦北县官垌镇卫生院 | 住所/地址 | 广西浦北县官垌街解放路 |
| | 法定代表人 | 陈巨远 | 电话 | 07778858760 |
| 销售单位 | 名称 | 南宁科析仪器成套有限公司 | 住所 | 南宁市星洲路32-4号 |
| | 法定代表人 | 戴兴伟 | 电话 | 13807713746 |
| 品名 | | 盐酸 | 用途 污水处理系统用 | |
| 数量 | | 壹佰贰拾千克 (120kg) | 有效次数 多次有效 | |
| 有效日期 自 2018年11月12日 至 2019年01月11日 | | | | |
| 公安机关:浦北县公安局禁毒大队 经办人:王世联 联系电话:0777-8312363 | | | 备注 | |
| 第() 批 次 | 购买单位 或 个人 | 购买数量 | 销售单位签章 | |
| | 经办人 | 电话 | 年 月 日 | |
| | 销售单位 | 经办人 | 电话 | 年 月 日 |
| 第() 批 次 | 购买单位 或 个人 | 购买数量 | 销售单位签章 | |
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| 第() 批 次 | 购买单位 或 个人 | 购买数量 | 销售单位签章 | |
| | 经办人 | 电话 | 年 月 日 | |
| | 销售单位 | 经办人 | 电话 | 年 月 日 |

1. 系统用户可在信息核查模块中按证书号查询 查询码:149185001011
2. 互联网查询地址: <http://www.8007117228.com> (查询码查询)
3. 公安网查询地址: <http://10.118.2.175/et/> (证书号或查询码查询) 第1次打印

Certificate for User & Manager

Explosive & Highly Toxic Chemicals

User and Manager must pass the training of "User" and "Manager" organized by the national public security department and get the certificate.



Warehouse 仓库

&

Storage 储存





Requirements to user of Controlled chemicals (GT) :

The purchasing unit must have a purchase license issued by the Public Security Bureau

Before applying for a purchase certificate, the following registration must be completed:

- Unit
- Personnel
- Storage location
- Purchased goods information



Before purchasing, GT must complete the following registration:

- Sale contract declaration
- Approval by public security & obtain the corresponding chemical purchasing license

Qualified suppliers who are authorized to sell controlled chemicals

Controlled chemicals purchasing must be conducted by central chemicals warehouse after applying in purchasing system.



Requirements to user of Controlled chemicals (GT) :



When purchasing controlled chemicals, it is required to provide the below information to the public security department which is controlling chemical purchasing system, such as

- Purchase license
- Using purpose (new chemical without register in GT account)
- Purchasing contract
- License of qualified transportation (cross-cities)



Requirements to user of Controlled chemicals (GT) :

Before receiving a new controlled chemical, the chemical inventory and using record must be verified with the central warehouse. (this chemical's stock in lab is zero)

| 编号 | 中文名称 | 英文名称 | CAS号 | 危险特性 | 分子式 | 沸点(°C) | 熔点(°C) | 操作码 |
|------|------------|-----------------------|---------|------------|------------------------|--------|--------|-----|
| 1.1 | 1,1-二氯乙烷 | 1,1-dichloroethane | 75-35-1 | 易燃液体, 高度易燃 | <chem>CClCl</chem> | 30.5 | 74.1 | ☞☞ |
| 1.2 | 1,1-二氯丙烷 | 1,1-dichloropropane | 75-31-1 | 易燃液体, 高度易燃 | <chem>CC(C)ClCl</chem> | -35 | 47.8 | ☞☞ |
| 1.3 | 1,1,2-三氯乙烷 | 1,1,2-trichloroethane | 79-32-7 | 易燃液体, 高度易燃 | <chem>CCl(C)Cl</chem> | -73 | 84.5 | ☞☞ |
| 1.4 | 1,1-二氯乙烷 | 1,1-dichloroethane | 75-35-1 | 易燃液体, 高度易燃 | <chem>CClCl</chem> | 30.5 | 74.1 | ☞☞ |
| 1.5 | 1,1-二氯丙烷 | 1,1-dichloropropane | 75-31-1 | 易燃液体, 高度易燃 | <chem>CC(C)ClCl</chem> | -35 | 47.8 | ☞☞ |
| 1.6 | 1,1-二氯乙烷 | 1,1-dichloroethane | 75-35-1 | 易燃液体, 高度易燃 | <chem>CClCl</chem> | 30.5 | 74.1 | ☞☞ |
| 1.7 | 1,1-二氯丙烷 | 1,1-dichloropropane | 75-31-1 | 易燃液体, 高度易燃 | <chem>CC(C)ClCl</chem> | -35 | 47.8 | ☞☞ |
| 1.8 | 1,1-二氯乙烷 | 1,1-dichloroethane | 75-35-1 | 易燃液体, 高度易燃 | <chem>CClCl</chem> | 30.5 | 74.1 | ☞☞ |
| 1.9 | 1,1-二氯丙烷 | 1,1-dichloropropane | 75-31-1 | 易燃液体, 高度易燃 | <chem>CC(C)ClCl</chem> | -35 | 47.8 | ☞☞ |
| 1.10 | 1,1-二氯乙烷 | 1,1-dichloroethane | 75-35-1 | 易燃液体, 高度易燃 | <chem>CClCl</chem> | 30.5 | 74.1 | ☞☞ |

Every January, the unit of strict chemicals using must to submit the copies (with the official seal of the Institute) of the use, management records and the transaction records of these chemicals to the police department for documentation and renew the purchasing certificate.

Requirements to **Central Warehouse** :

Maximum temporary storage (warehouse)

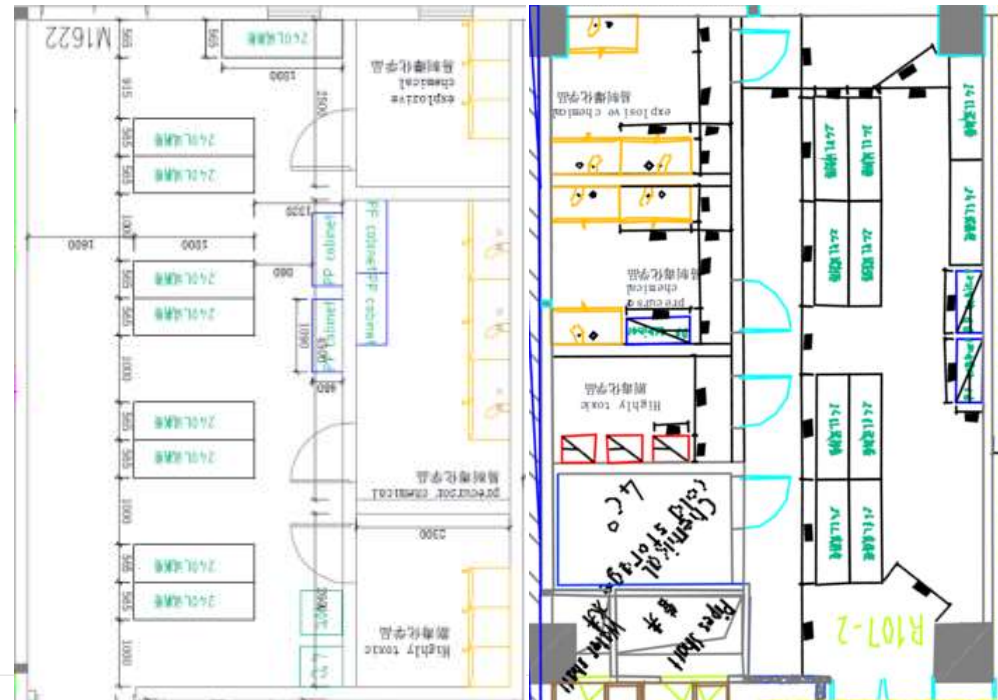
The purchased quantity of each time must be less than or equal to the maximum storage capacity of a single controlled chemical warehouse, such as:

- P.C. **1Kg/m²** warehouse
- E.C. **150Kg** GT total amount
- H.T.C **50Kg** GT total amount
- A single package cannot exceed **25Kg**.



T102

R107



Requirements to Labs:

The hazardous chemicals must have a material **hazard notification card** at storage areas.

Maximum storage capacity of Precursor Chemicals, Explosive Chemicals, Highly Toxic

Chemicals in a single lab is : **50Kg/50Kg/1kg**

Total amount of flammable materials in one lab \leq 50Kg !!!



| 危险化学品安全周知卡 | | |
|--|------------------------|---|
| 危险类别 | 品名 | 危险性标志 |
| 第3类 易燃液体 | 丙酮 乙醇 甲苯 二甲苯类 | |
| 理化特性 | | 危险性 |
| pH 值：无资料 初沸点/终沸点（°C）： 56.2/78.3(丙酮/乙醇) 闪点（°C）：12 爆炸上限（%）(体积分数)：无资料 爆炸下限（%）(体积分数)：1.4(乙醇)、1.1(丙酮) 相对密度（水=1）：0.79(乙醇)、0.78(丙酮) 相对密度（空气）：无资料 溶解性：互溶 稳定性：稳定 | | 高度易燃的液体，遇明火、高热时，极易引起火灾。与氧化剂接触，可能发生反应。与强氧化剂接触，可能发生爆炸。与空气混合，形成爆炸性混合物。 |
| 急救措施 | | 消防措施 |
| 吸入：如感不适，请将患者转移到新鲜空气中。必要时进行人工呼吸。脱去污染的衣服。用大量清水冲洗。就医。 | | 灭火剂：干粉、二氧化碳、水雾。用水灭火时，应使用雾状水。 |
| 安全与防护标识 | | |
| | | |
| 泄漏应急处理 | | |
| 戴好个人防护用品和防毒面具。防止液体泄漏。用沙土吸收。用大量水冲洗。 | | |
| 应急处置电话 | | 报警联系电话 |
| 消防：119 医疗急救：120 环保：12369 | | 119 120 12369 |



Compatibility



Dangerous Goods & Combustible Liquids Storage Segregation Chart

www.stock-xpress.com
STOCK-XPRESS
www.stock-xpress.com

| | | CLASS | | | | | | | | | | |
|-------------------------------|--|----------------|----------------|----------------------------------|----------------------------------|----------------|----------------------------------|----------------|----------------------------------|----------------------------------|----------------|----------------------------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Explosive substances | | | Segregate from | Segregate from | Segregate from | Segregate from | Segregate from | Segregate from | Segregate from | Segregate from | Segregate from | Segregate from |
| Compressed gases | | | | | | | | | | | | |
| 2.1 Flammable | | Segregate from | | Segregate from | Segregate from | Segregate from | Segregate from | Segregate from | Segregate from | ISOLATE | Keep Apart | Keep Apart |
| 2.2 Non flammable non toxic | | Segregate from | Keep Apart | | Keep Apart | Keep Apart | Segregation may not be necessary | Segregate from | Segregation may not be necessary | Segregation may not be necessary | Segregate from | Segregation may not be necessary |
| 2.3 Toxic | | Segregate from | Segregate from | Keep Apart | | Segregate from | Keep Apart | Segregate from | Keep Apart | Segregation may not be necessary | Segregate from | Segregation may not be necessary |
| Flammable liquids | | | | | | | | | | | | |
| 3.1 Flammable solid | | Segregate from | Segregate from | Keep Apart | Segregate from | | Keep Apart | Segregate from | Segregate from | Segregate from | ISOLATE | Keep Apart |
| 3.2 Spontaneously combustible | | Segregate from | Segregate from | Segregate from | Segregate from | Segregate from | Keep Apart | | Keep Apart | Segregate from | ISOLATE | Keep Apart |
| 3.3 Dangerous when wet | | Segregate from | Segregate from | Segregation may not be necessary | Keep Apart | Segregate from | Segregate from | Keep Apart | | Keep Apart | Segregate from | Segregation may not be necessary |
| Oxidizing substances | | | | | | | | | | | | |
| 5.1 Oxidizing agents | | Segregate from | Segregate from | Segregation may not be necessary | Segregation may not be necessary | Segregate from | Segregate from | Segregate from | Keep Apart | | Segregate from | Keep Apart |
| 5.2 Organic peroxides | | Segregate from | ISOLATE | Segregate from | Segregate from | ISOLATE | Segregate from | ISOLATE | Segregate from | Segregate from | | Keep Apart |
| Toxic substances | | | | | | | | | | | | |
| 6.1 Acute toxicity | | Segregate from | Keep Apart | Segregation may not be necessary | Segregation may not be necessary | Keep Apart | Keep Apart | Keep Apart | Segregation may not be necessary | Keep Apart | Keep Apart | Segregation may not be necessary |
| Corrosive substances | | | | | | | | | | | | |
| 8.1 Corrosive to metals | | Segregate from | Keep Apart | Keep Apart | Keep Apart | Keep Apart | Segregation may not be necessary | Keep Apart | Segregation may not be necessary | Keep Apart | Keep Apart | Segregation may not be necessary |

ISOLATE Segregation required as per the hazard label. Segregation may not be necessary if the substance is not in contact with other substances.

Keep Apart Segregation required as per the hazard label. Segregation may not be necessary if the substance is not in contact with other substances.

Segregation may not be necessary Segregation may not be necessary if the substance is not in contact with other substances.

STOCK-XPRESS
Tel: +86 80 113 042 8272
info@stock-xpress.com www.stock-xpress.com

ISOLATE
隔离储存

Keep Apart
隔开储存

Segregation from
分离储存

Storage type for Compatibility



Classified storage for small doses

小剂量的分类储存图例

- 隔离储存：

ISOLATE
隔离储存



- 分离储存：

Segregation
from
分离储存



- 隔开储存：

Keep Apart
隔开储存



Storage requirements for controlled chemicals:



1. According to the Characters of dangerous goods, partition, classification and storage



2. Total amount of flammable materials in one lab $\leq 50\text{Kg}$

3. Flammable and explosive must be separated from highly toxic chemicals. Keep acid/base separate from flammable and explosive chemicals.



4. Regularly check the inventory, storage environment and use records.



5. Set up the personnel allocation, technical management and other public security facilities to prevent the loss, theft and robbery



6. Where controlled hazardous chemicals are **lost, stolen or robbed**, it must be report to EHS office without delay, EHS will report to the local PC.

7. The safety evaluation report of storage area shall be approved by PC.



8. Must be stored separately in designated warehouses or cabinets.

"5-double" "2 keepers, 2monitors, 2locks, 2person receive & use, 2 record: inventory and using record



5 - Double :

- **Category II & III Precursor chemicals should,**
Category I Precursor, Explosive and highly toxic chemicals must carry out “5-double”
“2 keepers, 2 monitors, 2 locks, 2 person receive & use, 2 record: inventory and using record”

Example:

| Precursor chemicals Inventory & Using Record 实验室易制毒化学品使用登记表 | | | | | | | | | |
|---|------------|-----------------------------|------------------------------|------------------|-----------------------------------|---|--------------------------|--------------------------|--------------|
| Lab/实验室名称: GTIIT广东以色列理工学院 Chemical/化学品名称: Toluene | | | | | | | | | |
| Attn/联系人: Joy Liu Contact No./联系电话: XXXX XXXX XXXX | | | | | | | | | |
| No. 序号 | Date 时间 | Inbound Quantity 入库数量 | Outbound Quantity 出库数量 | In Stock 库存数量 | Recipient's Signature 领用人签名 | Signature of the supervisor of receipt 领用监督人签名 | Warehouseman A 仓库管理员A | Warehouseman B 仓库管理员B | Remark 备注 |
| 1 | 2024-01-02 | 500ml | N/A | 500ml | Joy Liu | Mandy Hu | Joy Liu | Mandy Hu | |
| 2 | 2024-01-03 | N/A | 150ml | 350ml | Joy Liu | Mandy Hu | Joy Liu | Mandy Hu | |
| 3 | 2024-02-04 | N/A | 50ml | 300ml | Mandy Hu | Joy Liu | Joy Liu | Mandy Hu | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| Remarks: All precursor chemicals outbound must be confirmed by three-level management. The confirmation of the third-level management personnel is: the receiver, two warehouse keeper confirms both at the same time, and the warehouse manager confirms; 备注: 所有易制毒化学品必须有三级管理人员签署确认才允许领出仓库。三级管理人员确认即为: 领用人确认, 仓库管理员两人同时确认, 仓库负责人确认; | | | | | | | | | |

Requirements to Labs:



Storage requirements:

- The handling equipment and tools for flammable and explosive chemicals shall comply with the explosion-proof requirements.

Specifications for storage and preservation of combustible and explosive goods

- Explosive chemicals need to be refrigerated should be placed in fire-proof refrigerators, e.g.: $\geq 8\%$ H_2O_2 (hydrogen peroxide)
- Explosive chemicals must be placed in fire-proof cabinets, e.g.: zinc powder, aluminum powder
- Reductive and oxidizing explosive chemicals should be stored separately or segregated



| | |
|---|---|
|  <p>Forced air cooling</p> <p>Highly efficient fans cool freshly stored produce quickly and maintain an even refrigeration temperature throughout the interior.</p> |  <p>Digital temperature display</p> <p>The digital temperature display indicates the refrigerator's interior temperature to the exact degree. This can be easily read from the outside to give users immediate information and without the need to open the appliance.</p> |
|  <p>Explosion protection: ATEX 95</p> <p>The ATEX 95 certification confirms that Liebherr laboratory fridges and freezers with explosion protection are appropriate for the storage of explosive and highly flammable materials within the meaning of EU Directive 2014/34/EU (ATEX).</p> |  <p>Alarm test function</p> <p>This test function can be used to check whether an internally or externally connected alarm system is functioning correctly. The appliance's refrigeration performance is not affected by this test.</p> |

Requirements to **Labs**:

PC requests:

- Strict Controlled Chemicals (precursor chemicals & explosive chemicals) in lab should not exceed the amount of two days' usage.

Highly toxic chemical

- must be controlled for the day's usage and used up the same day.
- If very small amount is used each time, the remaining chemicals must be managed and returned to the storage cabinet under two persons monitoring.



Requirements for the use site (lab) of controlled chemicals:

For detail requirement about Chemical storage quantity please refer to the files



Adobe Acrobat
Document



Microsoft Word
2003 Document



| | | |
|-------|--|--|
| 8 | Chemical safety | |
| 8.1 | Procurement, acceptance and distribution of hazardous chemicals | |
| 8.1.1 | Hazardous chemicals must be purchased from units with qualifications for the production and operation of hazardous chemicals | View the copy of the relevant supplier's administrative license qualification certificate |
| 8.1.2 | Compliance of purchase procedures for highly toxic, easy to manufacture drugs, easy to make explosives and explosives | The purchase of such hazardous chemicals must be approved by the school and submitted to the public security department for approval or filing, and then purchased from the unit with business license qualification; the functional department of the school shall keep data and establish files; it is not allowed to obtain controlled chemicals from other units without permission; the approval records and school approval records submitted to the superior competent department and the approval records of the school shall be checked; the purchase of hazardous chemicals shall have standardized acceptance records |
| 8.1.3 | Before purchasing narcotic drugs and psychotropic drugs, an application shall be made to the food and drug administration department | Purchase from designated suppliers or designated production enterprises after approval |
| 8.1.4 | Ensure the safety of chemical and gas transportation; the transportation vehicles, personnel and delivery methods in the campus meet the relevant specifications | Check data and spot check |
| 8.2 | Storage of Chemical Reagent in Laboratory | |
| 8.2.1 | Check if dynamic account is established for the use of chemicals in laboratories | Establish a list of hazardous chemicals in the laboratory, and have MSDS or safety weekly card for easy reference; regularly clean up expired drugs without accumulation |
| 8.2.2 | Check if reagent drugs are stored in specific space scientifically and orderly | The storage room, storage area and storage cabinet should be ventilated, insulated, dark and safe; the organic solvent storage area should be far away from heat sources and fire sources; the easy to leak and volatile reagents should be well ventilated; there should be no power socket or wiring board in the reagent cabinet; the chemicals should be stored in an orderly manner; necessary secondary leakage protection, adsorption or anti overflow functions should be provided; reagents should not be stacked or compatible Chemicals should not be mixed, solid liquid should not be placed disorderly, reagent bottles containing reagents should not be placed at the opening; chemical reagents should not be stored in the test bench without baffle |
| 8.2.3 | Check if total quantity of hazardous chemicals in laboratories conform to the requirements of specification | In principle, it should not exceed 100L or 100kg, in which the total storage amount of flammable and explosive chemicals should not exceed 50L or 50kg, and the single packaging container should not be more than 20L or 20kg; if a single experimental device has a storage tank of more than 10L of class A substances, or a storage tank of more than 20L of class B substances, or a storage tank of more than 50L of class C substances, a leakage alarm and ventilation linkage device should be installed. 50 square meters can be used as the standard, and the storage capacity can be inspected according to the area ratio of the laboratory |
| 8.2.4 | Check if chemical labels are obvious, complete and clear | The chemical packaging materials shall be provided with chemical labels that meet the requirements; when the chemicals are transferred or sub packed from the original packaging materials to other packaging materials, the packaging materials after transfer or sub packaging shall be re labeled in time. If the chemical label falls off, blurry and corroded, it should be filled in time. If it can not be confirmed, it should be disposed of as waste chemical |

Requirements to **Labs**:

Spill or Steal:

- If occur any **leakage, spill or steal** case, report to campus ERP team and EHS without delay.



By WeChat ERP Ground or Cell Phone to Lab PI & EHS

Abnormal loss of precursor, explosive and highly toxic chemicals caused by the broken container in the transportation process shall be

- Immediately report to the central warehouse Manager(when delivering from WH), Lab PI and EHS
- An written incident report and properly record.

Requirements to **Labs & WH:**

Waste Disposal:

- The chemicals generated from labs or W.H. must be collected by special container, labelled and sealed.

Remarks:

- Before start an experiment, it needs to consider the character of disposal waste in advance.
- The waste belongs to controlled chemicals, only the qualified waste disposal company with controlled chemicals handling ability can do.

For detail, please refer to GTIIT_2020 lab waste management

| Label of Waste Liquid 危险废物标签 | |
|---------------------------------|--|
| Product Name 品名 | <input type="checkbox"/> Acidic Waste Liquid 酸性废液 <input type="checkbox"/> Organic Waste Liquid 有机废液 <input type="checkbox"/> Other 其他 |
| Waste Liquid Category 废物类别 | <input type="checkbox"/> Corrosive 腐蚀性 <input type="checkbox"/> Ignitable 易燃性 <input type="checkbox"/> Oxidizing 氧化性 <input type="checkbox"/> Toxic 毒性 <input type="checkbox"/> Other 其他 |
| Quantity/Volume 数量/体积 | |
| Responsible Person 负责人 | |
| Department 部门 | |
| Date 日期 | |
| Prepared by 制表人 | |
| Checked by 审核人 | |
| Waste collected by 废物收集人 | |
| Waste collected date 废物收集日期 | |



What is the problem?



Strong acids and alkalis should be stored separately, in PP cabinet.



Flammable and Explosive Chemicals must be kept in fireproof cabinet.

What is the problem?



Flammable & Explosive chemicals needed to be refrigerated should be temporarily stored in explosion-proof refrigerator.



Strong acids and alkalis should be stored separately, in PP cabinet.

What is the problem?



- Flammable and Explosive Chemicals:**
- Maximum quantity is less than 50Kg.
 - Kept in fireproof cabinet.

What is the problem?

| No. | Date | Name | Quantity | Location | Signature | Signature | Signature | Signature | Signature | Signature |
|-----|------------|------------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1 | 2011.12.27 | 11L | | | | | | | | |
| 2 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 3 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 4 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 5 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 6 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 7 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 8 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 9 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 10 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 11 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 12 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 13 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 14 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 15 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 16 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 17 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 18 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 19 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 20 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |

| No. | Date | Name | Quantity | Location | Signature | Signature | Signature | Signature | Signature | Signature |
|-----|---------|------------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 2 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 3 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 4 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 5 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 6 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 7 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 8 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 9 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 10 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 11 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 12 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 13 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 14 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 15 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 16 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 17 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 18 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 19 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 20 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |

| No. | Date | Name | Quantity | Location | Signature | Signature | Signature | Signature | Signature | Signature |
|-----|---------|------------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 2 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 3 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 4 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 5 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 6 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 7 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 8 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 9 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 10 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 11 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 12 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 13 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 14 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 15 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 16 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 17 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 18 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 19 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 20 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |

- One chemical one record (including inventory and usage records)
- Never modify, if necessary, it must be signed by two keepers
- Never leave a blank line
- When receiving new C.C., inventory must be verified with central WH

| No. | Date | Name | Quantity | Location | Signature | Signature | Signature | Signature | Signature | Signature |
|-----|---------|------------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 2 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 3 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 4 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 5 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 6 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 7 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 8 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 9 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 10 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 11 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 12 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 13 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 14 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 15 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 16 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 17 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 18 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 19 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 20 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |



| No. | Date | Name | Quantity | Location | Signature | Signature | Signature | Signature | Signature | Signature |
|-----|---------|------------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 2 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 3 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 4 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 5 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 6 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 7 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 8 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 9 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 10 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 11 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 12 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 13 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 14 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 15 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 16 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 17 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 18 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 19 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |
| 20 | 2011.12 | 100ml 0.5L | 11L | 11L | | | | | | |

*„Nothing we do is worth
getting hurt for !“*

没什么是值得以牺牲安全作为代价!

