

Clinical Chemistry

السلامة في المختبر happy birthday

• Virtually all experiments conducted in a biochemistry laboratory present a potential risk to the well-being of the investigator. In planning any experiment it is essential 35 1.5 Safety in the laboratory that careful thought be given to all aspects of safety before the experimental design is finalized. Health hazards come from a variety of sources:

• جميع التجارب التي أجريت في مختبر الكيمياء الحيوية تقريباً تمثل خطراً محتملاً على رفاة المحقق. عند التخطيط لأي تجربة ، من الضروري 35 1.5 السلامة في المختبر أن يتم التفكير بعناية في جميع جوانب السلامة قبل الانتهاء من التصميم التجريبي. تأتي المخاطر الصحية من مجموعة متنوعة من المصادر:

• 1 - Chemical hazards: All chemicals are, to varying extents, capable of causing damage to the body. They may be irritants and cause a short-term effect on exposure. Alternatively they may be corrosive and cause severe and often irreversible damage to the skin. Examples include strong acids and alkalis

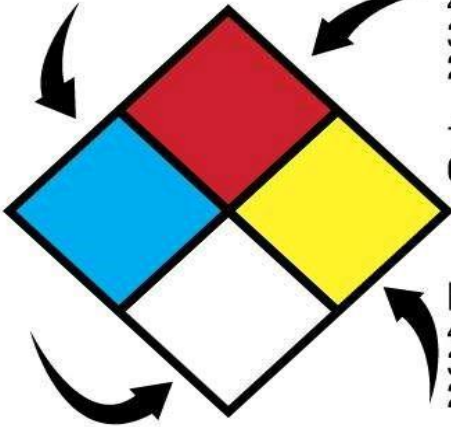
• 1 - المخاطر الكيميائية: جميع المواد الكيميائية ، بدرجات متفاوتة ، قادرة على إلحاق الضرر بالجسم. قد تكون مهيجة وتسبب تأثيراً قصير المدى عند التعرض. بدلاً من ذلك ، قد تكون مسببة للتآكل وتسبب تلفاً شديداً للجلد لا يمكن إصلاحه في كثير من الأحيان. تشمل الأمثلة الأحماض والقلويات القوية

National Fire Protection Association NFPA Chemical label 'Square Safety'

SAFETY IN THE LABORATORY



SAFETY IN THE LABORATORY

HEALTH HAZARD 4 Deadly 3 Extreme danger 2 Hazardous 1 Slightly hazardous 0 Normal material SPECIFIC HAZARD ACID-Acid ALK-Alkali COR-Corrosive OXY-Oxidizer P-Polymerization ☢-Radioactive W-Use No Water CHEMICAL NAME _____ MSDS # _____		FIRE HAZARD Flash Points 4 Below 73° F 3 Below 100° F 2 Above 100° F not exceeding 200° F 1 Above 200° F 0 Will not burn Reactivity 4 May detonate 3 Shock & heat 2 Violent chemical change 1 Unstable if heated 0 Stable
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SAFETY IN THE LABORATORY

																					
HEALTH ☐	WARNING EXPOSURE TO THIS MATERIAL CAN CAUSE DAMAGE TO THE FOLLOWING ORGANS AND/OR PARTS OF THE BODY:																				
FLAMMABILITY ☐	<table border="0"> <tr> <td>☐ BLADDER</td> <td>☐ LIVER</td> </tr> <tr> <td>☐ BLOOD</td> <td>☐ LUNG</td> </tr> <tr> <td>☐ BRAIN</td> <td>☐ LYMPHATICS</td> </tr> <tr> <td>☐ CARDIOVASCULAR SYSTEM</td> <td>☐ PANCREAS</td> </tr> <tr> <td>☐ CENTRAL NERVOUS SYSTEM</td> <td>☐ PROSTATE</td> </tr> <tr> <td>☐ EYES</td> <td>☐ RESPIRATORY SYSTEM</td> </tr> <tr> <td>☐ GALLBLADDER</td> <td>☐ SKIN</td> </tr> <tr> <td>☐ HEART</td> <td>☐ SPLEEN</td> </tr> <tr> <td>☐ INTESTINES</td> <td>☐ STOMACH</td> </tr> <tr> <td>☐ KIDNEY</td> <td>☐ UTERUS</td> </tr> </table>	☐ BLADDER	☐ LIVER	☐ BLOOD	☐ LUNG	☐ BRAIN	☐ LYMPHATICS	☐ CARDIOVASCULAR SYSTEM	☐ PANCREAS	☐ CENTRAL NERVOUS SYSTEM	☐ PROSTATE	☐ EYES	☐ RESPIRATORY SYSTEM	☐ GALLBLADDER	☐ SKIN	☐ HEART	☐ SPLEEN	☐ INTESTINES	☐ STOMACH	☐ KIDNEY	☐ UTERUS
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INSTABILITY ☐	FOR FURTHER INFORMATION AND INSTRUCTIONS REFER TO CORRESPONDING M.S.D.S																				
PERSONAL PROTECTION ☐																					
SEE OTHER SIDE																					

SAFETY IN THE LABORATORY



Sulfuric Acid

Colorless to dark-brown, oil, odorless liquid. Corrosive, causes severe burns to eyes/skin/respiratory tract. May cause blindness. Chronic: tooth erosion, GI disturbances, and dermatitis. Reaction with water produces excessive heat.

Colorless to dark-brown, oil, odorless liquid. Corrosive, causes severe burns to eyes/skin/respiratory tract. May cause blindness. Chronic: tooth erosion, GI disturbances, and dermatitis. Reaction with water produces excessive heat.



CAS No. 7664-93-9

SAFETY IN THE LABORATORY

CHEMICAL X

DANGER

HAZARD STATEMENTS:
Fatal If swallowed.
Causes severe skin burns and eye damage.

PRECAUTIONARY STATEMENTS:

- Wear protective gloves.
- Wear face protection.
- Do not eat drink or smoke when using this product.
- Wash hands thoroughly after use.
- Store in a sealed container.
- **IF ON SKIN:** Rinse immediately with cool water.
- **IF IN EYES:** Rinse thoroughly with water and seek medical attention.
- **IF SWALLOWED:** Do not induce vomiting. Seek medical attention.

Dispose of contents/container in accordance with local regulations.
Chemical X Manufacturing, 1234 Over There St., (123) 456-7890

See the S.D.S for more information.

CAUTION

CHEMICAL STORAGE AREA

CAUTION

**WEAR EYE PROTECTION
RUBBER GLOVES & APRONS
WHEN HANDLING
CHEMICALS**

Physical Hazards				
				
Explosives	Flammable Liquids	Oxidizing Liquids	Compressed Gases	Corrosive to Metals

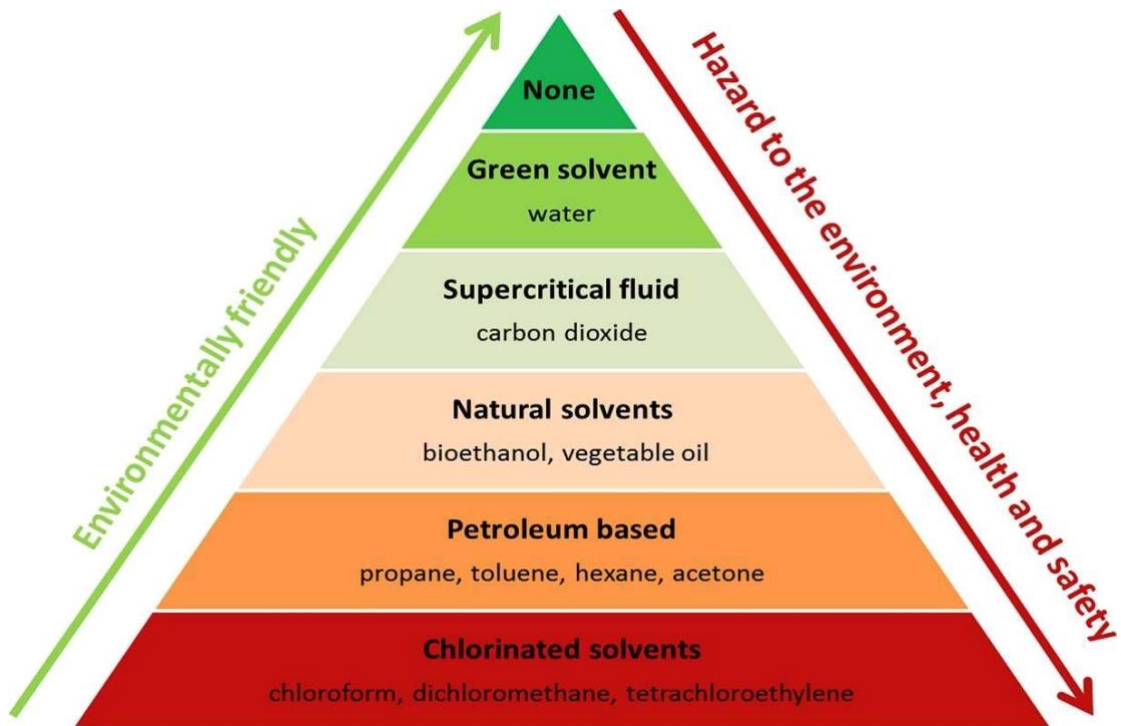
Health Hazards	Env. Hazards
	
Acute Toxicity	Hazardous to the Aquatic Environment


 Skin Corrosion


 Skin Irritation


 CMR¹, STOT²,
Aspiration Hazard

SAFETY IN THE LABORATORY



SAFETY IN THE LABORATORY

- 2 - Biological hazards: Examples include human body fluids that may carry infections such as HIV, laboratory animals that may cause allergic reactions or transmit certain diseases, pathogenic animal and cell tissue cultures, and all microorganisms including genetically engineered forms.

• 2 - المخاطر البيولوجية: تشمل الأمثلة سوائل جسم الإنسان التي قد تحمل عدوى مثل فيروس نقص المناعة البشرية ، وحيوانات المختبر التي قد تسبب ردود فعل تحسسية أو تنقل أمراضاً معينة ، ومزارع الأنسجة الحيوانية والخلاوية المسببة للأمراض ، وجميع الكائنات الحية الدقيقة بما في ذلك الأشكال المعدلة وراثيًا.

SAFETY IN THE LABORATORY

BIOHAZARD

BIOLOGICAL HAZARDS

VIRUSES FUNGI

BACTERIA PARASITES

WARNING

Biological hazard

No smoking

No eating or drinking

SAFETY IN THE LABORATORY

SHARPS Red Sharps Container ✓ Needles ✓ Ampules ✓ Broken Glass ✓ Blades ✓ Razors ✓ Staples ✓ Trocars ✓ Guide Wires ✓ Other Sharps 	BIOHAZARD Red Container or Red Liner in Container ✓ Infectious Waste ✓ Blood Products (albumin, etc.) ✓ Contaminated Personal Protective Equipment (PPE) ✓ IV Tubing ✓ Cultures, Stocks 	TRACE CHEMO Yellow Container ✓ Empty vials, ampules ✓ Empty Syringes, Needles ✓ Empty IVs ✓ Gowns ✓ Gloves ✓ Tubing ✓ Aprons ✓ Wipes ✓ Packaging 
RCRA HAZARD Black Container ✓ Hazardous meds (RCRA) ✓ Half/Partial doses (RCRA) ✓ Hazardous bulk meds ✓ P-listed drugs, packaging ✓ Bulk chemo ✓ Pathological Waste (Incineration Only) 	PHARMACEUTICAL Blue Container ✓ Pills ✓ Injectables ✓ Antibiotics 	RADIOACTIVE Shielded Containers with Radioactive Symbol ✓ Fluorine-18 (F-18). 110 minutes half-life. ✓ Technetium-99 (T-99m). 6 hours half-life. ✓ Iodine-131 (I-131). 8 days half-life. ✓ Strontium-89 (Sr-89). 52 days half-life. ✓ Iridium-192 (Ir-192). 74 days half-life. ✓ Cobalt-60 (Co-60). 53 years half-life. 

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- 3 - Electrical and mechanical hazards: All electrical apparatus should be used and maintained in accordance with the manufacturers' instructions.

• 3 - المخاطر الكهربائية والميكانيكية: يجب استخدام جميع الأجهزة الكهربائية وصيانتها وفقاً لتعليمات الشركة الصانعة.

Electrophoresis equipment presents a particular potential for safety problems. Centrifuges, especially high-speed varieties, also need careful use especially in the correct use and balance of the rotors.

تمثل معدات الرحلان الكهربائي إمكانية خاصة لمشاكل السلامة. أجهزة الطرد المركزي ، وخاصة الأنواع عالية السرعة ، تحتاج أيضاً إلى استخدام دقيق خاصة في الاستخدام الصحيح وتوازن الدوارات.

- 4 - General laboratory hazards: Common examples include syringe needles, broken glassware and liquid nitrogen flasks.

4 - مخاطر المختبر العامة: الأمثلة الشائعة تشمل إبر الحقن ، والأواني الزجاجية المكسورة وقوارير النيتروجين السائل.