

Government Chemist Laboratory Authority (GCLA)

INTRODUCTION TO CHEMICAL SAFETY MANAGEMENT

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*Chemical Supervisors Training- Protea
Hotel on 24th July 2024*



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Introduction(Utangulizi).....

- **Chemical safety** is the application of the best practices for handling chemicals and chemical processes to **minimize risk**, whether to a person, facility, or community.
- An understanding of the potential hazards and precautions required in handling of chemicals is of utmost importance in preventing exposure to chemicals and mishaps.
- **Chemical safety** involves understanding the physical, chemical, and toxicological hazards of chemicals.
- **Chemical safety** is concerned with **maximizing safety** in environments where chemicals are involved.
- Usalama dhidi ya madhara ya kemikali ni matumizi ya mbinu bora katika shughuli za kemikali ili kupunguza madhara yatokanayo na kemikali hizo kwa mtu,jamii na mazingira.
- Hivyo basi uelewa juu ya athari zitokanazo na kemikali ni muhimu ili kuchukua tahadhari zinazohitajika katika kufanya shughuli za kemikali
- Hivyo Usalama dhidi ya madhara ya kemikali unahusisha kuongeza usalama katika mazingira ambapo kemikali zinatumiwa,kuhifadhiwa au kusafirishwa.



Introduction ...

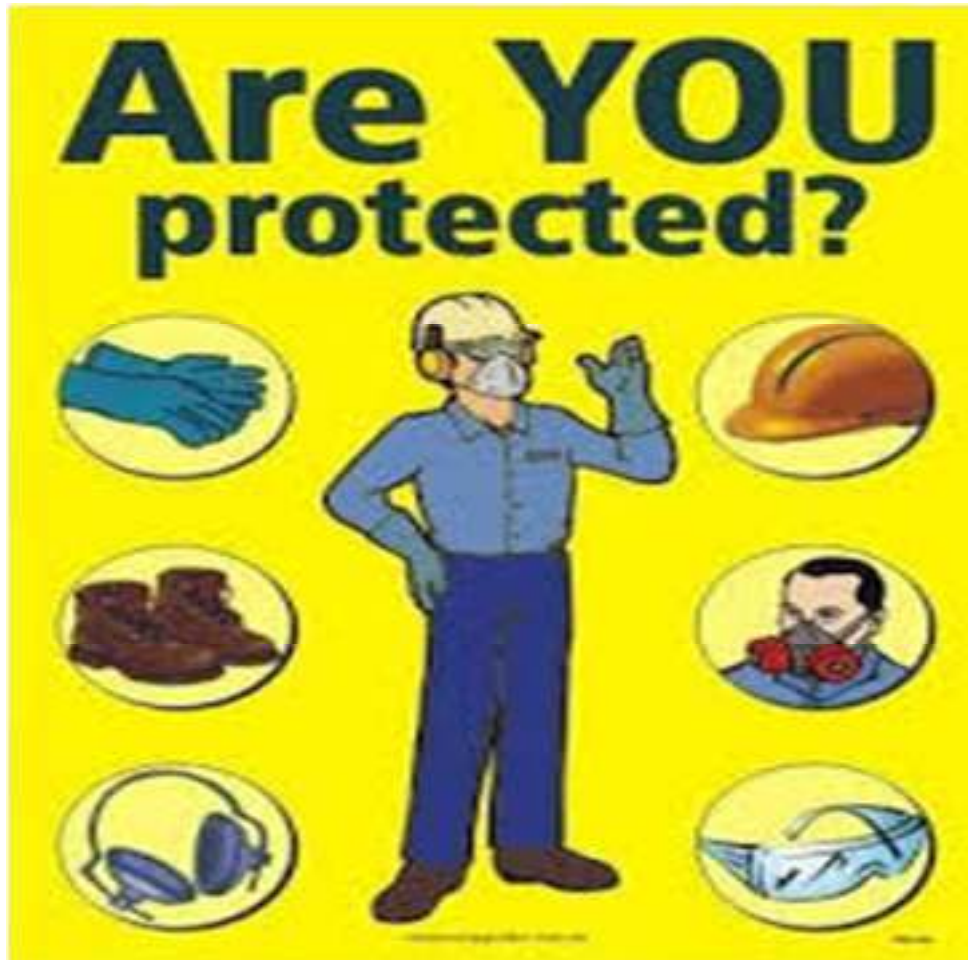
- Promoting the safe use of chemicals and chemical products is a shared responsibility of
 - manufacturers,
 - the government and
 - those **who sell or use** chemicals and chemical products.
- Manufacturers and government must work together to:
 - Develop, implement and comply with sound regulations so that chemicals are safe for intended use.
 - Enhance scientific understanding of chemical safety.
 - Produce accessible safety information e.g **MSDS**.
- Katika kukuza matumizi salama ya kemikali na bidhaa zake ni jukumu la pamoja la:
 - watengenezaji,
 - serikali na
 - wale wanaouza au kutumia kemikali na bidhaa za kemikali.
- Watengenezaji wa kemikali na serikali lazima washirikiane ili:
 - Kuendeleza, kutekeleza na kuzingatia kanuni zinazofaa ili kemikali ziwe salama kwa matumizi yaliyokusudiwa.
 - Kuboresha uelewa wa kisayansi wa usalama wa kemikali.
 - Pia kutengeneza taarifa za usalama zinazoweza kufikiwa k.m MSDS

Introduction ...

- Many governments have Authorities which make chemical safety recommendations and enforce laws relating to chemical safety.
- In Tanzania this is implemented through various organs including the GCLA (Industrial and Consumer Chemicals(Management and Control) Act (Cap 182)) .
- Duniani, Nchi nyingi zina Mamlaka zinazotoa mapendekezo ya usalama wa kemikali na kutekeleza sheria zinazohusika na usalama wa kemikali.
- Nchini Tanzania hili linatekelezwa kupitia Taasisi na sheria mbalimbali ikiwemo Sheria ya Mamlaka GCLA (Sheria ya Usimamizi na Udhhibiti wa Kemikali za Viwandani na Majumbani (Sura ya 182)).



Introduction(Utangulizi)....



2:Key Aspects on Safety Precautions

- Understand the nature and intrinsic property of a chemical and what from these properties we get harmed.
- Kuelewa uhalisia wa kemikali na madhara yake.
- Understand different routes of entry. This will make you conscious whenever handling a chemical.
- Kuelewa njia tofauti za kuingia mwilini . Hii itafanya ufahamu wakati wowote unapojihusisha na kemikali.
- Do not work alone in the laboratories particularly when performing hazardous procedures.
- Usifanye kazi peke yako katika maabara haswa wakati unapojihusisha na kemikali hatarishi.
- Plan appropriate procedures and the positioning of all equipment before beginning any experiment.
- Panga taratibu zinazofaa na uwekaji wa vifaa vyote kabla ya kuanza majaribio yoyote

Safety Precautions.....

- To have proper PPE in place and use them appropriately.
- Kuwa na vifaa kinga (PPE) sahihi vinazoendana na kemikali husika mahala pakazi.
- To have labelled products and MSDS in place.
- Weka MSDS na lebo mahala sahihi.
- To have a first aid kit as emergency responder.
- Kuwa na Sanduku la huduma ya kwanza.
- To understand local procedures for handling and reporting chemical accidents.
- Kuelewa taratibu za ndani za kushughulikia na kuripoti ajali za kemikali.



Safety Precautions.....

- Make others aware of the location of emergency equipment.
- Wajulishe wengine kuhusu eneo la vifaa vya dharura.
- Make others in the work place aware of any specific hazards associated with your work
- Wajulishe wengine mahala pa kazi kuhusu hatari zozote mahususi zinazohusiana na kemikali hatarishi.



3: Ways to take on Safety Measures while dealing with chemicals

Mainly includes;

- A. Ordering of chemicals
- B. Receipt of chemicals
- C. Storage of chemicals
- D. Handling of chemicals
- E. In-house chemicals Transporting.

Mambo ya kuzingatia ili kujikinga na madhara yatokanayo na kemikali wakati wa ;

- A. Kuagiza kemikali
- B. Kupokea kemikali
- C. Kuhifadhi kemikali
- D. Kutunza kemikali
- E. Kusafirishaji kemikali



A: Ordering of chemicals(Kuagiza Kemikali)

- Always order the smallest possible quantity of chemical. *This reduces hazards and chemical waste.*
- Daima agiza kiasi kidogo zaidi cha kemikali. Hii inapunguza hatari na taka za kemikali.
- Understand the hazardous properties of the chemical that is to be purchased.
- Kuelewa madhara na uhatari wa kemikali ambayo inatakiwa kununuliwa.
- Where possible, purchase a less hazardous chemical.
- Inapowezekana, nunua kemikali isiyo na madhara au madhara madogo.



B:Receipt of chemicals(Kupokea kemikali)

- Received packages must be checked to ensure that the containers are in good condition.
- Kemikali zilizopokelewa lazima zikaguliwe ili kuhakikisha kuwa ziko katika hali nzuri.
- Details of new chemicals must be entered in the inventory and stored in a well designated area.
- Maelezo ya kemikali mpya lazima yaigizwe kwenye hesabu na kuhifadhiwa katika eneo lililowekwa vizuri.
- The date of receipt and date of first usage must be recorded, especially on the bottles for Analytical chemicals.
- Tarehe ya kupokelewa na tarehe ya matumizi ya kwanza lazima irekodiwe, haswa kwenye chupa za kemikali za uchunguzi wa kimaabara.



C:Storage of chemicals(Uhifadhi wa kemikali)

- The following chemical groups must be separated by storing them in different cabinets/shelves or by providing secondary containment (trays).
- Makundi ya kemikali yafuatayo lazima yatenganishwe kwa kuhifadhi kwenye kabati/rafu tofauti
 - Oxidizers, including peroxides
 - Acids
 - Bases
 - Flammable materials
 - Reproductive toxins
 - Carcinogens

Any incompatibles within the above group must be stored separately.



C:Storage of chemicals.....

- Bulk stocks must be stored in a separate building. A spill or fire involving bulk containers will be difficult to tackle when compared with that involving smaller bottles.
- Kemikali katika hali ya kichele zinatakiwa zihifadhiwe tofauti kwani ukitokea moto ni ngumu kudhibitiwa.
- Chemicals must not be placed indiscriminately in the storage shelf. They must be grouped based on their compatibility.
- Kemikali hazipaswi kuwekwa kiholela kwenye rafu ya kuhifadhi. Ni lazima ziwekwe kulingana na utangamano wao.
- Separate chemicals into compatible groups and store alphabetically within compatible groups because in the event of an accidental breakage or activity, incompatible chemicals that are stored in close proximity can mix to start a fire, hazardous fumes or explosions.



C:Storage of chemicals.....

DANGEROUS GOODS & COMBUSTIBLE LIQUIDS STORAGE COMPATIBILITY CHART

CLASS OR SUBSIDIARY RISK															QUANTITY AT STORE
FLAMMABLE GASES	OK TO STORE TOGETHER	OK TO STORE TOGETHER	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	ISOLATE	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS		
NON TOXIC NON FLAMMABLE GASES	OK TO STORE TOGETHER	OK TO STORE TOGETHER	OK TO STORE TOGETHER	OK TO STORE TOGETHER	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	ISOLATE	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	
TOXIC GAS	SEGREGATE AT LEAST 3MTS	OK TO STORE TOGETHER	MAY NOT BE COMPATIBLE CHECK MSDS AND NOTES	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	ISOLATE	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	
OXIDISING GAS	SEGREGATE AT LEAST 3MTS	OK TO STORE TOGETHER	SEGREGATE AT LEAST 3MTS	OK TO STORE TOGETHER	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	ISOLATE	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	
FLAMMABLE LIQUIDS + COMBUSTIBLE LIQUIDS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	OK TO STORE TOGETHER	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	ISOLATE	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	
FLAMMABLE SOLID	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 3MTS	OK TO STORE TOGETHER	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	ISOLATE	SEGREGATE AT LEAST 3MTS	MAY NOT BE COMPATIBLE CHECK MSDS AND NOTES	
SPONTANEOUSLY COMBUSTIBLE	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 3MTS	OK TO STORE TOGETHER	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	ISOLATE	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	
DANGEROUS WHEN WET	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	OK TO STORE TOGETHER	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	ISOLATE	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	
OXIDISING AGENT	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	MAY NOT BE COMPATIBLE CHECK MSDS AND NOTES	ISOLATE	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	
ORGANIC PEROXIDE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	ISOLATE	OK TO STORE TOGETHER	ISOLATE	SEGREGATE AT LEAST 3MTS	
TOXIC	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	ISOLATE	OK TO STORE TOGETHER	SEGREGATE AT LEAST 5MTS	
CORROSIVE	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	SEGREGATE AT LEAST 5MTS	MAY NOT BE COMPATIBLE CHECK MSDS AND NOTES	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	SEGREGATE AT LEAST 3MTS	MAY NOT BE COMPATIBLE CHECK MSDS AND NOTES	

Proper Storage Vs Improper Storage



Uhifadhi sahihi



Uhifadhi usiosahihi

C. Storage of chemicals....

Qualities of a proper Store of Chemicals

- Should be well labeled as a storage area.
- Should be well ventilated.
- Should have proper Lightening either natural or Artificial lightening.
- MSDS for particular chemicals must be translated in swahili on five sections.
- The floor should be smooth and made of concrete material.
- Chemicals should be stored based on compatibility.
- A proper store had to have warning signs for a particular chemical.



D.Handling of chemicals(Kutumia Kemikali)

- Bench tops must not be used as storage area to prevent clutter. Keep only chemical bottles that is for immediate use on bench tops.
- All chemical bottles must be tightly closed after use and must not be placed on edge of the bench or shelf from which they can fall.
- Chemical formulae or short forms must not be used for labeling chemical bottles.
- Labels must include the full name of the chemical, hazard pictogram and a brief description of the hazards and precautions to be taken.



E.In-house chemicals Transporting(Kusafirisha kemikali)

- Use secondary containment when transporting chemicals.
- When transporting several containers, use carts with attached side rails and trays with provision for spill containment.
- Bottle carriers must be used while moving single container.



Proper Vs Improper Transportation of chemicals

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Usafirishaji sahihi



Usafirishaji usiosahihi



4. Chemical inventory and Management of Spills

- The inventory of stored chemicals – *a list with details of chemicals in stock*, must be examined at least annually. Annual inventory checks helps in many ways:
 - It ensures that chemicals are segregated according to their compatibility.
 - Discarding expired chemicals and help to save space.
 - Help to quickly locate the chemicals.
 - The expiration date of peroxides can be monitored.
 - Help to identify bottles/packages with worn out labels or those which are leaking.
- Hesabu ya kemikali zilizohifadhiwa - orodha yenye maelezo ya kemikali katika hisa, lazima ichunguzwe angalau kila mwaka. Ukaguzi wa kila mwaka wa hesabu husaidia kwa njia nyingi:
 - Kutupa kemikali zilizoisha muda wake na kusaidia kuokoa nafasi.
 - Msaada kwa haraka Machapisho ya kemikali.
 - Tarehe ya kumalizika kwa peroxides inaweza kufuatiliwa.
 - Inasaidia kutambua chupa/furushi zilizo na lebo zilizochakaa au zinazovuja



4. Chemical spills.....

The following equipment must be maintained in laboratories/work place for dealing with chemical spills:

- Chemical spill kits
- Personal protective equipment , e.g., chemical cartridge respirator
- Scoops and dustpans
- Dry sand



4. Chemical spills.....

The following actions must be taken in the event of a chemical spill.

- Evacuate non-essential personnel from the area.
- Ventilate the area by opening the windows.
- **Ventilate eneo hilo kwa kufungua madirisha.**
- If the spilled material is flammable, extinguish all open flames. Do not operate electric switches near the spill.
- **Ikiwa kemikali zilizomwagika zinaweza kuwaka, zima moto kwanza pia zima swichi zilizo karibu na eneo la kemikali zilizomwagika.**
- Avoid inhaling vapour from spilled material.
- **Epuka kuvuta mvuke au hewa kutoka kwenye kemikali zilizomwagika**
- Use personal protective equipment.
- **Tumia vifaa Kinga sahihi**
- Ensure that there is an exit near by.
- **Hakikisha kuwa kuna njia ya kutoka karibu**
- Use spill containment kits to clean up the spill.



5. Emergency measures and the use of PPE

- All chemical splashes on the skin must be immediately flushed under running water.
- Endapo kemikali itakumwagikia kwenye ngozi osha na maji yanayotiririka.
- Contaminated clothing must be removed while flushing the body. Flushing must be continued for at least 15 minutes.
- Nguo zilizochafuliwa na kemikali lazima ziondolewe wakati wa kujisafisha mwili. Pia Usafi lazima uchukue angalau dakika 15.
- Eyes must be immediately flushed with copious amount of water for at least 15 minutes.
- Osha macho na maji mengi kwa muda wa dakika 15.
- In case of contact with hydrofluoric acid, apply 2.5% calcium gluconate gel on the skin after flushing the affected part with water. Refer safety data sheets for more information

5. Proper Protective Equipment(PPE)...

KUNDI LA KWANZA:(EXPLOSIVES) MILIPUKO		
MIFANO NA NAMNA YA KUJIKINGA(EXAMPLES OF CHEMICALS)	ALAMA ZA TAHADHARI (CHEMICAL WARNING SIGNS)	VIFAA VYA KUJIKINGA (PROPER PREOTECTIVE EQUIPMENTS)
<p>Mfano:Ammonium nitrate,Vilipuzi, Acetyl Nitrate, hexanitroethane</p> <p>Tahadhali</p> <ul style="list-style-type: none"> • Kuepuka vyanzo ya moto. • Epuka kuvuta hewa iliyotokana na mlipuko • Kumbuka kutumia vifaa kinga 	<p>Ammonium Nitrate</p> 	<p>Mavazi maalum ya kujikinga na kemikali (chemical suit), Matumizi ya barakoa maalum, Viatu vya kiusalama na Gloves.</p> 
KUNDI LA PILI: (GASES)GESI		
<p>Mfano:Mitungi ya kuzimia moto, gesi asilia, gesi ya kupika, gesi za kuchomelea</p> <p>Tahadhali:</p> <ul style="list-style-type: none"> • Mitungi yenye gesi itunzwe vizuri kuepuka kuvuja na kuleta madhara. 		<p>Mavazi maalum ya kujikinga na kemikali (chemical suit), Matumizi ya barakoa maalum, Viatu vya kiusalama , miwani maalum ya kuinga kemikali .</p> 

PPE.....

KUNDI LA TATU: KIMIMINIKA KINACHOWAKA (FLAMMABLE LIQUIDS)

Mfano:

Rangi, Thinners, Ethanol, Acetone

Tahadhari:

- Hifadhi mbali na vyanzo vya moto au cheche
- Tumia vifaa kinga sahihi wakati wa matumizi
- Hakikisha eneo la kazi lina mzunguko wa hewa.



Mavazi maalum ya kujikinga na kemikali (chemical suit), Matumizi ya barakoa maalum, Viatu vya kiusalama, miwani maalum ya kuinga kemikali



KUNDI LA NNE: YABISI INAYOWAKA (FLAMMABLE SOLIDS)

Mfano:

Sulfur, Alkali metals, Calcium carbide, Activated Carbon

Tahadhari:

- Vaa vifaa kinga ikiwemo gloves
- Nawa mikono vizuri baada ya kufanya kazi katika mazingira yenye kemikali.
- Vua nguo zilizomwagikiwa na kemikali na ufue vizuri kabla ya kutumia tena
- Epuka vyanzo vya moto karibu na kemikali.



Miwani ya kuinga macho, Mavazi maalum ya kujikinga na kemikali (chemical suit), Matumizi ya barakoa maalum, Viatu vya kiusalama



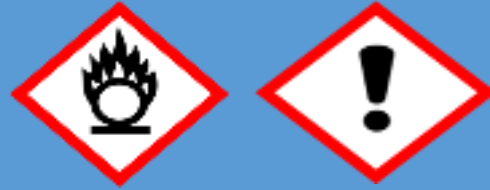
Mifano:

Ammonium nitrate fertilizers, Hydrogen peroxide, Potassium perchlorate na Sodium nitrate

Tahadhari:

- Hifadhi mbali na vyanzo vya moto au cheche Tumia vifaa kinga kwa ajili ya ngozi, Uso macho
- Hakikisha haichangamanj na kemikali inayowaka

KUNDI LA TANO: OXIDIZING AGENT



Miwani ya kuinga macho, Mavazi maalum ya kujikinga na kemikali (chemical suit), Matumizi ya barakoa maalum, Viatu vya kiusalama



KUNDI LA SITA: SUMU(TOXIC)

Mfano:

Sodium Cyanide, Mercuric Chloride, Hydrazine
Arsenic trioxide

Tahadhari:

- Isiguse ngozi au macho
- Usivute wala kula,
- Vaa vifaa kinga
- Ikimezwa, mwathirika alazwe kwenye hewa safi na apewe kiua sumu.



Miwani ya kuinga macho, Mavazi maalum ya kujikinga na kemikali (chemical suit), Matumizi ya barakoa maalum, Viatu vya kiusalama



KUNDI LA SABA:MIONZI(RADIOACTIVE)

Mfano:

Uranium, Cobalt, Radioactive ores

Tahadhari:

- Kaa mbali na vyanzo au kemikali zenye asili ya mionzi
- Vaa mavazi sahihi ya nayoweza kukuinga dhidi ya mionzi mfano. "Lead-free shielding"



Miwani ya kuinga macho, Mavazi maalum ya kujikinga na mionzi, Viatu vya kiusalama na gloves



KUNDI LA NANE: BABUZI(CORROSIVES)

Mfano:

Hydrochloric acid, Sulfuric acid, Hydrogen fluoride, Nitric acid, Ammonia solution na Caustic soda

Tahadhari:

- Inanguza
- Isiguse ngozi au macho
- Vaa vifaa kinga unapo jishughulisha na kemikali hii
- Ikitokea ikamwagika kwenye ngozi au macho osha kwa maji mengi na kisha nenda kwenye kituo cha afya kwa huduma zaidi



Miwani ya kuinga macho, Mavazi maalum ya kujikinga na kemikali (chemical suit), Matumizi ya barakoa maalum, Viatu vya kiusalama



KUNDI LA TISA: KEMIKALI ZISIZO NA MADHARA YA KIPEKEE

Mfano:

Lithium metal batteries, Vilainishi na Magnesium Oxide

Tahadhari:

Chukua tahadhari zote Muhumu kulingana na miongozo ya kemikali husika



Miwani ya kuinga macho, Mavazi maalum ya kujikinga na kemikali (chemical suit), Matumizi ya barakoa maalum, Viatu vya kiusalama



6. Disposal of chemicals

- Laboratories/factories must maintain labeled carboys/cans for collecting spent chemicals.
- Care must be taken to prevent mixing of incompatible chemicals while transferring spent chemicals.
- In case of chemical wastes or absolute chemicals in your storage area.
 1. Identify
 2. Isolate
 3. Follow disposal procedures
- Observe all the local and municipal regulations for chemical disposal issues.
- Uangalifu lazima uchukuliwe ili kuzuia mchanganyiko wa kemikali zisizolingana wakati wa kuhamisha kemikali zilizotumika.
- Zingatia kanuni zote za manispaa katika utupaji kemikali.
- Pia zingatia kanuni, sheria na Taratibu za Mamlaka (GCLA) katika utupaji wa kemikali.

7. Conclusion

- Chemical safety will improve your employees' safety and health.
- Usalama dhidi ya madhara ya kemikali utaboresha usalama na afya ya wafanyakazi wako.
- It will potentially introduce cost savings, through more effective work practices such as correct storage, handling, use and disposal procedures and ensure more profit.
- Itapunguza gharama katika shughuli za kemikali.
- Potential harm to the environment will also be reduced.
- Pia madhara yatokanayo na kemikali hizo kwenye Mazingira yatapunguzwa.



Chemical safety



TAKE CHEMICAL
SAFETY
PRECAUTIONS
REDUCE RISKS

End



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