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GOVERNMENT CHEMIST LABORATORY AUTHORITY - GCLA

CHEMICAL EFFECTS

(MADHARA YA KEMIKALI)

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CONTENTS

1.INTRODUCTION - UTANGULIZI

- Chemicals are also a critical part of many industrial processes important to maintain global standard of living.
- However, chemicals have potential adverse effects on the health of people and on the environment due to their intrinsic properties and behaviours.
- Dangerous/Hazardous cargo are either solids, liquids, or gases that can harm living organism, property and environment
- These chemical effects create a need to control and manage chemical handling.

- Kemikali ni muhimu katika maisha yetu ya kila siku, na faida zake zinaonekana kuanzia katika matumizi ya majumbani, kilimo, elimu, Viwanda na Uchimbaji wa Madini.
- Kemikali zinaweza kuwa na madhara kwa afya ya watu na kwa mazingira kulingana na uhatarishi zinazobeba.
- Zikiwa katika hali tofauti kama yabisi, kimiminika, au gesi zinaweza kusababisha madhara
- Athari hizi za kemikali zimeleta hitaji la kudhibiti na kudhibiti shughuli zote ili kulinda afya za watu na mazingira.

1. INTRODUCTION - UTANGULIZI...

1. INTRODUCTION - UTANGULIZI…

Chemicals can cause many different types of harm ranging from mild like skin irritation to major like cancer and permanent disability.

The harmful effects of chemical substances depend on two things:

1) Toxicity
2) Exposure to that chemical

Toxicity is a level at which a particular chemical give harm to organism.

Exposure means the way people or environment come into contact with a chemical, either directly or through another substance contaminated with a chemical.

- Kemikali zinaweza kusababisha aina tofauti za madhara kuanzia kuwasha kwa ngozi hadi madhara makubwa kama vile saratani na ulemavu wa kudumu.

- Uhatarishi wa kemikali yoyote hutegemea vitu viwili

1) Kiwango cha uhatarishi
2) mfiduo wa kemikali hiyo.

Mfiduo humaanisha jinsi kemikali inavyotumika au kushughulikiwa ambapo kiwango chake kinategemea kiasi cha kemikali na muda wa kugusana.

2. CHEMICAL RISKS - UHATARISHI WA KEMIKALI

Any activity involving chemical, *(production/importation storage, transport, handling, use* and *disposal)* should be assessed its dangers and benefits.

Shughuli yoyote inayohusisha kemikali, (uzalishaji, Uhifadhi, Usafirishaji, Uuzaji, na Uteketezaji) inapaswa kutathminiwa hatari na manufaa yake

Generally chemical risk is not only at the areas where chemicals are handled but also offices and homes are at risk of various chemical products.

Kwa ujumla athari za kemikali siyo tu katika maeneo ambayo kemikali hushughulikiwa bali pia maofisini na majumbani kuna bidhaa nyingi ambazo zina asili ya kemikali.

These chemical products include cements, paints, spray, inks,toners, adhesives, detergents and oil routinely expose people to hazard effect of these products.

Bidhaa hizo ni pamoja na saruji, rangi, dawa, wino, tona, sabuni na vipodozi mbalimbali ambazo mara kwa mara huwaweka watu kwenye hatari kupata madhara.

3.TYPES OF CHEMICAL EFFECT/ AINA ZA MADHARA YA KEMIKALI

- Chemicals have different hazardous conditions depending on the physical properties and type of organism affected

Kemikali zina hali tofauti za uhatarishi kulingana na sifa zake na aina ya viumbe vinavyoathirika kutokana na sifa hizo

- Basically there are three types:

i. Physical effect- Madhara yanayosababishwa na sifa za kemikali
ii. Health effect- Madhara kwa afya za viumbe hai.
iii. Environment effect- Madhara kwenye mazingira

- Physical effect: like explosive and fire outbreak

Madhara yanayoambatana na sifa za kemikali kama vile kulipuka, kuwaka au kuchochea.

3.TYPES OF CHEMICAL EFFECT/ AINA ZA MADHARA YA KEMIKALI……

- Health effect: Effect on living organism resulting to injuries and death ranging from acute to chronic effect.

Athari za kiafya: Athari kwa kiumbe hai zinazopelekea majeraha na kifo kuanzia zile athari za papo hapo hadi zile za muda mrefu.

- Environment effect: Include effect on aquatic organism, air pollution and soil pollution.

Athari kwa mazingira: Hii ni kwa viumbe vya majini, uchafuzi wa hewa na uchafuzi wa udongo

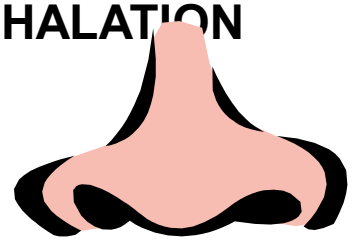
4. HOW CAN CHEMICALS ENTER OUR BODIES- NJIA ZA KEMIKALI KUINGIA MWILINI

There are three main routes by which people can be exposed to chemicals.

INHALATION

Breathing in chemicals in gaseous form such as formaldehyde or ammonia and contaminated dust

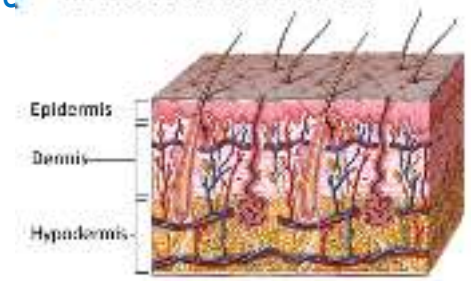
Kuvuta hewa yenye kemikali iliyo katika hali ya gesi kama vile formaldehyde au amonia na vumbi lenye kemikali



ABSORPTION

Through the skin contact, open wounds and Eyes,

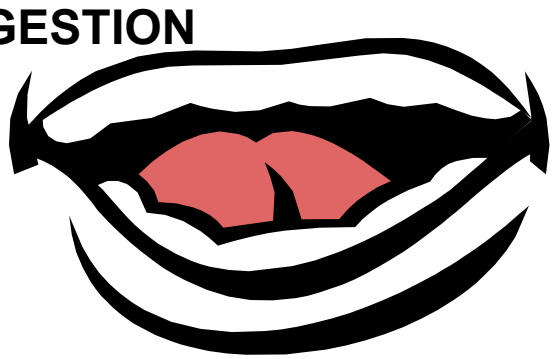
Kemikali zinazoingia kupitia ngozi au majeraha ya wazi.



INGESTION

Chemicals can enter in the body through ingestion in form of gases, dusts, vapours, fumes, liquids or solids.

Kemikali zinaweza kuingia mwilini kwa kumeza kwa katika mfumo wa gesi, vumbi, mivuke, mafusho, vimiminika au yabisi.



5.GROUPS OF CHEMICALS THAT CAUSE HEALTH RISKS

MAKUNDI YA KEMIKALI NA UHATARISHI WAKE…..

There are many forms in which chemicals can pose heath effect s such as:

- Asphyxiants (Vinazuia hewa kuingia mwilini)
- Corrosives (Babuzi)
- Irritants (Maudhi madogo madogo)
- Sensitizers (Vihisishi)
- Carcinogens (Viini vya kansa)
- Mutagens (inayobadili mfumo wa jinsi)
- Teratogens (Inayodhuru maendeleo ya kiumbe ambacho bado hakijazaliwa
- Reactive (zinazoleta madhara zikichanganywa na kemikali nyingine
- Flammable (Zinazowaka)

5. GROUPS OF CHEMICALS THAT CAUSE HEALTH RISKS
MAKUNDI YA KEMIKALI NA UHATARISHI WAKE

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Asphyxiants: deprive the body oxygen by interrupting the transfer and use of oxygen by the bloodstream **eg** Carbon monoxide and cyanide.

Corrosives: visible and irreversible changes to the composition of a material due to direct contact eg Sulfuric acid and sodium hydroxide.

Irritants: cause part of the body to itch or become sore **eg** detergents and soaps, solvents, acids and alkalis, and cement.

Sensitizers: cause an allergic reaction in people who face repeated exposure over time to certain chemicals **eg** Chlorine and alkalis.

5.COMMON GROUPS OF CHEMICALS THAT CAUSE HEALTH RISKS……

Carcinogens: these are cancer-causing chemical substance Eg enzene, cadmium, formaldehyde, and vinyl chloride.

Mutagens: cause genetic changes to a cell's DNA and RNA by preventing normal biological functions resulting to malfunction of a particular organ **eg** :Benzene, ionizing radiation, and hydrogen peroxide

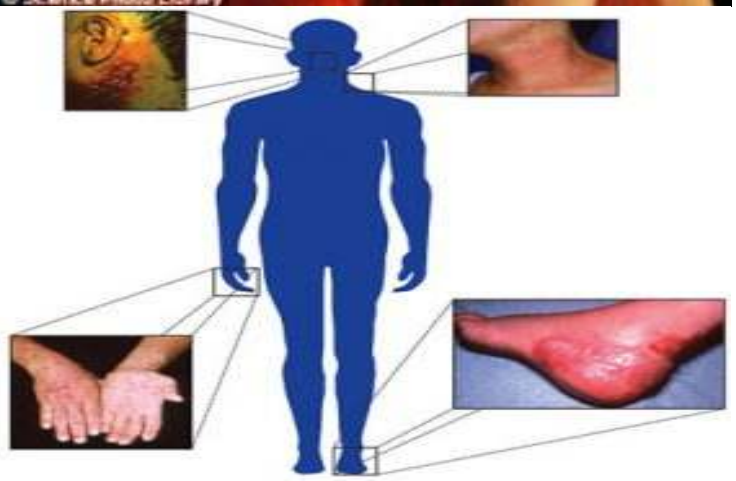
Teratogens: disrupt the normal development of a fetus causing birth defects and even the healthy advancement of pregnancy eg:Thalidomide and organic mercur compounds

Reactive : substances that cause a chemical hazard such as when mixed with other chemical or non-chemical substances eg: Nitric acid, benzoyl peroxide, and silane

6.TARGET ORGANS

S/NO	HEALTH RISK GROUPS	TARGET ORGAN	EFFECT	EXAMPLE
1	Irritant/Corrosives	Any, but usually the eyes, lungs and skin	Inflammation, burns and blisters.	Acids, Alkalis and some oxides.
2	Sensitizers	Any, but frequently lungs and skin	Chronic asthma-like disease and dermatitis.	Toluene, di-isocyanate (TDI), amine and epoxy resins.
3	Carcinogenic	Any organs, but frequently skin, lungs and Kidney	Cancer in affected organ or tissue	2-Naphthylamine, benzidine and asbestos
4	Poisonous	Any organs but frequently liver, brain, kidney	Death of cells in vital organs and later death of organism	Carbon tetrachloride, mercury, cadmium, carbon monoxide, hydrogen cyanide
5	Asphyxiants	Lungs/ blood system	Gases replace normal oxygen content of air	Acetylene, cynide, carbon dioxide

ORGANS AFFECTED BY CHEMICALS



7.CONCLUSION- HITIMISHO

- The use of chemicals is inevitable in the current living world
- Matumizi ya kemikali hayaepukiki katika ulimwengu wa sasa.
- Determination of the consequences of exposure from a chemical substance is the first priority in any chemical management activity.
- Kipaumbele cha kwanza katika shughuli zozote za usimamizi wa kemikali ni kutathmini mdhara yanayoweza kutokea kulingana na kemikali husika.
- It is a chemical dealer responsibility to know possible effect of the handled chemical and the best way to eliminate it.
- Ni wajibu wa kila mdau wa kemikali kujua athari inayoweza kusababishwa na kemikali anazojishughulisha nazo kisha kudhibiti athali hizo.

Asanteni kwa usikivu!

Thank you!