GOVERNMENT OF MONGOLIA

MINISTRY OF HEALTH

НИЙГМИЙН ЭРҮҮЛ МЭНДИЙН ҮНДЭСНИЙ ТӨВ
NATIONAL CENTER FOR PUBLIC HEALTH

USE OF NON-FOOD PRODUCT CONTAINERS-HUMAN HEALTH

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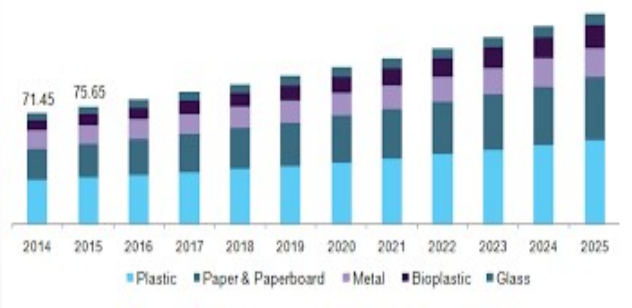
2017.11.21

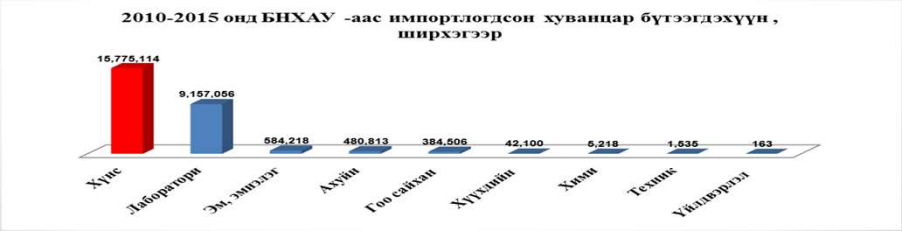
WORLD PACKAGING CONSUMPTION

Per capita packaging consumption is the highest in USA and Japan at 200-220kg, and 120-130kg in West European countries. Consumption tends to increase in future.

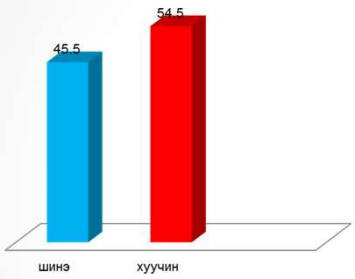


PACKAGING CONSUMPTION IN MONGOLIA

- Domestic packaging sector supplies 30% of total packaging consumption in Mongolia, and 70% is imported (MoFALI report)
- Between 2010-2014 and first half of 2015, Mongolia imported plastic packaging products from China, Korea, USA, Poland, Russia, Germany, Vietnam, Japan, Australia, Italy and Great Britain. Almost all packaging products were imported from China (97.1%).
- Plastic package import by types: food packages-60%, packages for laboratory use-34%, for household use-2,5%, for medical equipment-2%, and packages for cosmetics, toys, chemicals and lubricants- 4% .



PLASTIC CONTAINERS SOLD AT MARKETS



44.9% of plastic containers sold at marketplaces are used containers, which enables consumers to choose non-food product plastic containers.

Used plastic containers sold at Narantuul market by origins:

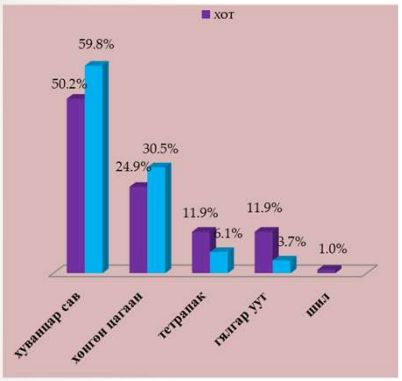
- imported - 47,1% (China, Germany, Malaysia, Russia and Korea),
- from local sources -52,9% (MCS, Uguuj bakery, restaurants, individuals, plastic contaiers for emulsion) or used containers obtained from food producers and tanneries, and mining companies and sold by individuals.

USE OF NON-FOOD PRODUCTS CONTAINERS

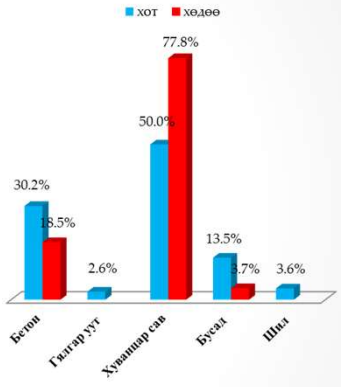
According survey by PHI in 2008 among 892 households, 78.1% of urban HHs and 50.4% of rural HHs were found using used plastic chemicals and lubricants containers which can not be sterilized through washing or cleaning. Hygienic status of 53.4% of containers used for storing and transporting water by HHs was assessed as “medium”.

As 2016 survey indicated, an average HH owns 3-4 non-food product plastic containers with capacities ranging from 20l-100l. Compared other containers, twice more non-food product plastic containers are used in HHs, regardless of area.

Containers for dairy transporting, by types



Containers for dairy storing, by types



Half of the urban respondents (n=207), and 77.8% of rural respondents (n=90) use used plastic containers for water, juice, mayonnaise, and blue/white canisters to store dairy products, and 50.2%-59.8% of urban and rural respondents use plastic containers to transport dairy products.

SAFETY AND HYGIENIC REQUIREMENT FOR PACKAGING PRODUCTS

As stated in MNS 5547:2005 standard

- *Volatile and toxic compounds indicators*:
  Formaldehyde, acetone, toloul, xylol and benzole
- *Heavy metal residue:*
  Pb, Hg, Ni, Co, Ca, Cr, Fe,
- *Bacterial indicators:*
  Number of bacteria, coli index, coli titre, E-coli, salmonella, staphylococci

TOXIC EFFECTS OF PACKAGING PRODUCTS TO HEALTH

- **1. Glass**- is the safest among all packaging products, however, it may contain lead, and that is why permissible level of lead in glass is strictly indicated. Lead effects on liver and kidney is damaging, and affects intelligence of children and fetus development.
- **2. Energy drink and beer cans:** Contains aluminum, an excessive to which affects memory and concentration, and cause Alzheimer's disease. They are contaminated with ortho-phenylphenol or chemical used in pesticides. The test of 61 beer cans made in 27 countries revealed ortho-phenylphenol in 40of them, with levels ranging between 1.2-40 mkg/l /J Agric Food Chem. 2006 Aug 9;54(16):5731-5/.
- **3. Plastic container:** Most plastic containers contain carcinogenic substances such as formaldehyde, bisphenol A and sterine, which causes allergy, gene damaging, chronic diseases, including cancer. High exposure to them may damage liver and kidneys of young children.
- **4. Juice and milk plastic container:** Such containers are called polyolefin, and contains benzophenone that affects estrogen, causing risks of developing liver inflammation, infertility, miscarriage, candidiasis, osteoporosis, stress, blood coagulation, goiter, breast cancer in human.
- **5. Paper**: may contain range of chemicals and compounds that affect huam reproductive system, such as DEHP (di(2-ethylhexyl) phthalate), DBP (di-n-butyl phthalate), BBP (butylbenzyl phthalate), DiBP (diisobutyl phthalate), DiDP (diisodecyl phthalate), DiNP (diisononyl phthalate), and DnOP (di(n-octyl) phthalate) and polyfluorinated compounds (PFCs), perfluoroalkyl or polyfluoroalkyl substances (PFASs).

TOXIC SUBSTANCES EMITING FROM WATER CONTAINERS TO WATER:

1.The amount of lead emitted from plastic containers (oil canisters, big blue container) to water is 500-800 times (for oil canister), and 60-72 times higher than the WHO recommended level and MNS 900:2005 National standard (admissible amount 0.01mg/l)

2. Formaldehyde concentration in water in plastic containers exceeds 1800-3900 times (for oil canister)and 3600-6900 times (for blue container) the admissible amount of formaldehyde emitted from plastic containers to food, which is set at 0.1mg/l. Formalin was also found in water from plastic containers in varying amount, for example 27.0-39.17mg/l in oil canister, and 37.67-53.43mg/l in blue containers, which tend to increase as time of water in plastic containers increases. This indicates the plastic containers can't be used for food products.

3. No emiitance of iron, copper and manganese from aluminum containers was detected, but zinc (0.06-0.29mg/l), lead (1.22-2.50mg/l), and cadmium (0.03-0.16mg/l). Concentrations of these elements exceed permissible levels set in National standard for drinking water MS 900:2005 (C_{Zn}=5.0mg/l, C_{Pb}=0.01mg/l, C_{Cd}=0.003mg/l) by 122-250 times for lead, and 10-53 times for cadmium, except zinc, which is lower than permissible level. Also, the amount of heavy metals emitting from enamel coated and aluminum containers to food products exceeds the admissible amount of emittance (C_{Zn}=1.6mg/l, C_{Pb}=0.6mg/l) as approved in July 28, 1949 by Union of hygiene inspectors' meeting.


Зураг 1. Тосны канистар


Зураг 3. Усны том цэнхэр сав


Зураг 2. Хөнгөнцагаан сав


Зураг 5. Цэвэр усны 1 литрийн сав


Зураг 4. Төмөр хувин

Source: Results of survey on "emittance of toxic substances from water containers to water" by PHI, 2008

1. No emiitance of copper from metal bucket was detected, but iron (17.20-26.80mg/l), zinc (4.05-5.45mg/l), lead (2.40-3.60mg/l) and cadmium (0.10-0.21mg/l). Concentrations of these elements exceed permissible levels set in National standard for drinking water MS 900:2005 (C_{Fe}=0.3mg/l, C_{Zn}=5.0mg/l, C_{Pb}=0.01mg/l, and C_{Cd}=0.003mg/l) by 58-90 times for iron, 10-53 times for lead, 33-70 times for cadmium, except zinc, which is around permissible level.

1. Concentration of formaldehyde emitted from 1 liter plastic bottle to water exceeds admissible level of formaldehyde emitting from plastic bottles to water approved by Senior Hygiene doctor of Russian federation in Feb 2, 1971, by 2922-28000 times

Source: Results of survey on "emittance of toxic substances from water containers to water" by PHI, 2008

PROPOSALS AND RECOMMENDATIONS

1. Packaging products for foods, household and industrial goods, lubricants, and cosmetics fall under same classification group, according to imported goods coding system. Due to its inappropriateness, the packaging products need to be classified in accordance with international plastics classification codes, and registration system at border points needs to updated;
2. Set up an effective mechanism to test raw materials for plastic packages used in licensed packaging companies, and permit use of raw materials after verifying them as PETE and polyprophylene, for production;
3. Government support to producers of safe, and hygienic food containers;
4. Due to low awareness on plastic classification codes, health impacts and proper use of plastics, to intensify awareness raising campaign on potential health hazards associated with non-food product plastic containers use, and health protection among general public, through mass media.

CONCLUSION AND RECOMMENDATIONS

1. 44.9% of plastic containers on market is used containers, which is attributive to increased use of non-food product plastic containers. Therefore, sale of used plastic containers should be banned;
2. The emptied plastic chemicals containers are retrieved by individuals for re-sale to consumers. This is the main reason for households to use those containers to pack, store, and transport food products. Therefore, the toxic waste disposal/dump sites should be immediately established and toxic wastes should be destroyed properly;
3. Laboratories capacity to test food packaging products needs to be improved;
4. Increase diversity of food containers, such as glass, glazed, enamel and wooden containers through promoting production and imports;
5. Develop test methodologies to determine concentration level of heavy metals such as arsenic, nickel, chrome and aluminum; and toxic and carcinogenic substances such as E-caprolactam, melamine, phtalic anhydrate, phtalic acid, silicic acid, phenol, tiuram, urotropine, salicylic acid, vynil group, and bisphenol A, and standardize admissible amount of these metals and substances emitting from food containers to food products.

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THANKS FOR YOUR ATTENTION!