

STUDY OF HEAVY METALS IN CHILDREN'S TOY AND CAMPAIGN FOR SAFE PLAY IN NEPAL



**SO
WHOM
CAN WE
TRUST?**



**KEEP HAZARDOUS
CHEMICALS AWAY FROM
CHILDREN'S TOYS AND
ENSURE THEIR RIGHT TO
PLAY SAFE**

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Leadership
Center
Foundation



About CEPHED

Center for Public Health and Environmental Development (CEPHED) is an environmental NGO established in the year 2004, by and through the contribution, coordination from a group of activist and experienced people from medical, environment and public health sectors. CEPHED's focus is to serve Nepalese people and communities in the field of public health and environment. CEPHED has adopted the vision of bridging people with the science and technology for healthy living and environmental safety and taken a mission to act as bridging forum between people with science and technology to make access new scientific knowledge, technology and safety measures of environment and public health sector through research, coordination, capacity building and policy dialogue, etc. CEPHED is working with and also willing to work with group and organizations around the country with an understanding that this will help to bring the experience from the ground to the concerned authorities' notice that leads to more meaningful and sustainable solutions. From past eight years CEPHED has been engaged mainly on research, awareness raising, capacity building, policy influence especially in the area of chemical management, pesticide, obsolete pesticide, healthcare waste, POPs, heavy metals like mercury, lead and cadmium, electronic waste etc. Additionally, CEPHED has been actively engaged in research, production of Information, Education and Communication (IEC) materials both in printed and electronic format widely disseminating all over the country.

The research results and findings have been shared with all stakeholders especially government, business communities and general public at large scale thorough all possible means such as meeting, interaction, presentation, newspaper, radio and television program and also through organizing series of district, regional and national level awareness and capacity building training programs on these issues. With its growing interest and engagement with various environmental issues of national and international importance, it became an active participating organization of several global networks working in the area of public health, environment and toxic free future. CEPHED is member organization of Toxic Link, International POPs Elimination Network (IPEN), Global Alliance for Incinerator Alternatives (GAIA), Healthcare Without Harm (HCWH), Collaborative on Health and the Environment (CHE) and Zero Mercury Working Group (ZMWG)/EEB.

CEPHED has been doing research, raising awareness and at the same time setting pilot model projects. CEPHED has recently completed the feasibility study and strategy development for mercury free health care services from there pilot projects. The second intervention made by CEPHED towards curbing the release of POPs (Dioxins, Furans) is the development of environmentally sound management of health care waste and promotion of the use of dry welding machine for metal fabricating as model program.

CEPHED has been awarded with "2011 Stockholm Convention's PEN Award" in the ceremony hosted by POPs Convention Secretariat because of organization's outstanding work on raising awareness on PCBs, their health effects and ways to prevent their release. CEPHED has been also awarded with the Environment Conservation Award 2012 from the Ministry of Science, Technology and Environment (MOSTE), Government of Nepal for its work on environment and public health protection. Moreover, it has been also honored with the Grill Entrepreneurs' Recognition Award 2011.

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Executive Summary

From Ancient period, Toys and dolls have been part of a children's daily life till their adulthood. Toys are one of the most favorable things for children to play as we can see children spending all their time with toys. A variety of colorful toys such as dolls, balls, pencil boxes, toy cars, backpacks etc. are available in the market. Playing with toys is an enjoyable means of training the young people in society. Toys and play in general, are important when it comes to growing up and learning about the world around us. The young use toys and play to discover their identity help their bodies grow strong learn cause and effect, explore relationships, and practice skills they will need as adults. Adults use toys and play to form and strengthen social bonds, teach, remember and reinforce lessons from their youth, discover their identity, exercise their minds and bodies, explore relationships, practice skills, and decorate their living spaces.

The forms and design of children playing sets have been changed according to time, situation and development of people. The literature shows that the history of children toys begins from ancient Greek and Roman civilization. With the time the materials from which children toys are made have also changed. There are evidences that toys used to be made from clay, fabric, animal bones, stones, wood, etc. With the use of plastic came into action by 1940s, More toys were made with plastic after 1945. Since then plastic toys covered the world market along with few wooden toys, metal toys and Barbie dolls. These days, most of the toys and dolls found in market are colorful along with addition of several life threatened chemicals like lead, cadmium, etc. to give additional features and attraction to children toys and dolls. These chemicals can cause severe health problems on children and even causes to death on long term exposure.

The study is carried out with help from fellowship under UNEP Eco-Peace Leadership Program, Yuhan-Kimberly University of South Korea by Center for Public Health and Environment Development (CEPHED) in Nepal to know the existing scenario of chemical presence focused on heavy metal presence on children toys and dolls. Also the study is carried out to know about the perception and awareness level, buying behavior, label inspection habit among children toy's consumer i.e. parents, retailers and school with the help of set of questionnaire. During the study, toys were collected from market around Kathmandu Valley and Dhulikhel Municipality. In total 100 toys were purchased from market consisting of composition material plastic (63%), metal (11%), wood (9%), rubber (7%), fabric (4%), clay (3), foam (2%) paper (1%). Toys were coded and sent for test at Nepal Handicraft Testing Laboratory, A public Private Partnership model laboratory operated by Federation of Handicraft Associations of Nepal (FHAN) and Nepal Bureau of Standard and Metrology, Ministry of Industry, Government of Nepal for heavy metal content with help of X-Ray Fluorescence (XRF).

The result from set of questionnaire shows none of the school, retailer or parents are aware about the chemical presence in children products. Though there was clear information and warning of not to sale product for children below 3 years of age, parents and retailers were found carelessness on such critical information during toy purchase or sale. Very few (10%) check labeling during sample purchase let aside the chemical presence in children toys. There is not any authorized governmental body working on particular issue. i.e. chemical presence in children toys and dolls. Most of market (63%) is covered by toys made up of plastic material while dolls are made up of fabric and cotton one. There was very little variety of wooden and magnetic toys available in market. During product purchase, 38% of school opt. for plastic toys while 19% and

15% goes for animal related product and wooden product respectively. During toy purchase, 41% of parents opt. for plastic toys while giving preference on attraction (26%), color (16%) and durability (11%) but none of parents inspect about chemical presence which sound surprising. As per retailer, no retailer thinks about chemical certification and information regarding manufactured date or expiry date. Majority of product are imported from Chinese market giving some priority (34%) on Indian product as well. Last year only, children product of above NRs. 70 Cr. is imported where Chinese and Indian contribution ranks up as 54% and 36% respectively. Few children products are imported from countries like Sri Lanka, Thailand, Taiwan, Hong Kong, USA etc. Study shows there are not any government procedure/requirement which retailers need to fulfill during import or sale of toys and dolls.

A laboratory result shows that 54% of the samples have one of the toxic heavy metal. i.e. lead, mercury, cadmium, chromium and bromine. 40% of samples have bromine content ranges from 3.6 ppm to 3923.00 ppm whereas 28% of samples have lead content ranging from 15.2 ppm to 8305.8 ppm among which 46.42% of samples have lead content higher than US guideline value. i.e. 90 ppm. 9% of sample has cadmium contain ranging from 16.2 ppm to 409.5 ppm. 33.33% of sample has cadmium contain higher than US Standard i.e. 75 ppm. 14% of sample has chromium contain ranging from 9.6 ppm to 2052.2 ppm among which 42.86% has chromium contain higher than the US Standard of 60 ppm. 64.29% of the samples purchased from retailer shop contain toxic chemical whereas very few 16.67% purchased from educational enterprises contain toxic chemical in children play-set. Children play-set composed of foam and paper have 100% toxic chemical in them whereas clay (66.67%), metal (54.55%) and plastic (50.79%) play-set contain toxic chemical.

The reason behind this uncontrolled and alarming level of toxic chemical presence in children toys is mainly due to lack of standard, guidelines and regulations. So it is recommended that there should be authorized governmental body to monitor and develop the standard. Also since the majority of market is covered by imported product, there must be strong enactment during import period. Since our study area was unable to cover the hazardous chemical phthalates from children toys due to incapability of laboratory apparatus, the need of laboratory with updated facility should also be established.

Finally, it is duties for all of us to Keep hazardous chemicals away from children`s toys and ensure their right to play safe.

Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
BBP	benzyl butyl phthalate
BIS	Bureau of Indian Standards
CCC	China Compulsory Certification
CEPHED	Center for Public Health and Environmental Development
CNCA	Certification and Accreditation Administration
CPSC	Consumer Product Safety Commission
CPSCRA	Consumer Product Safety Commission Reform Act
CSE	Centre for Science and Environment
D	Detected
DBP	di-n-butyl phthalate
EU	European Union
FDA	Food and Drug Administration
IPEN	International PoPs Elimination Network
IQ	Intelligent Quotients
ISO	International Standard
Kg	Kilogram
mg.	microgram
NBSM	Nepal Bureau of Standard and Metrology
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety Health Administration
ppm	parts per million
PVC	Poly Vinyl Chloride
STEL	Short-term Exposure Level
TLV	Threshold Limit Value
TWA	Total Weighted Average
US	United States
XRF	X-ray Fluorescence

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1. Introduction

Toys are one of the most favorable things for children to play and we can see all the time children keep playing with them. A variety of colorful toys such as dolls, balls, pencil boxes, toy cars, backpacks etc. are available in the market and parents buy for their children without having knowledge of what these products are made of and its toxic ingredients. A **toy** is defined as **any product or material designed or clearly intended for use in play by children (0-9 years of age) or adolescents (10-18 years of age). OR A "children's toy" is defined as a consumer product designed or intended by the manufacturer for a child who is 12 years old or younger for use by the child when the child plays.**¹ Playing with toys is an enjoyable means of training the young for life in society. Different materials like fabric, plastic, paper, rubber, etc. are used to make toys enjoyable to both young and old. Many items are designed to serve as toys, but goods produced for other purposes can also be used.

Toys and play in general, are important when it comes to growing up and learning about the world around us. The young use toys and plays to discover their identity and help their bodies grow strong, learn cause and effect, explore relationships, and practice skills they will need as adults. Adults use toys and play to form and strengthen social bonds, teach, remember and reinforce lessons from their youth, discover their identity, exercise their minds and bodies, explore relationships, practice skills, and decorate their living spaces. Generally in world scenario, children's playing products were found to be made up of six toxic metals: antimony, arsenic, cadmium, chromium, lead, and mercury. All six metals are well-known to cause serious harms to human health, especially in children from mild pain to permanent loss of their Intelligent Quotients (IQ). While playing kids are more likely to chew objects and put their hands in their mouth thereby increasing their exposure possibilities to any substances in these products. Children are more vulnerable to heavy metals and other toxic substances due to their developing stage.

2. History of Children Toys:

Even before thousand years back, there used to be Toys, the thing is material used in those days might not be same as recent days. Their toys were mostly from handmade things that were found in nature, like animal bones, stones, wood, or clay. The ancient Greeks and Romans played with

¹ <http://www.cpsc.gov/phthalates>



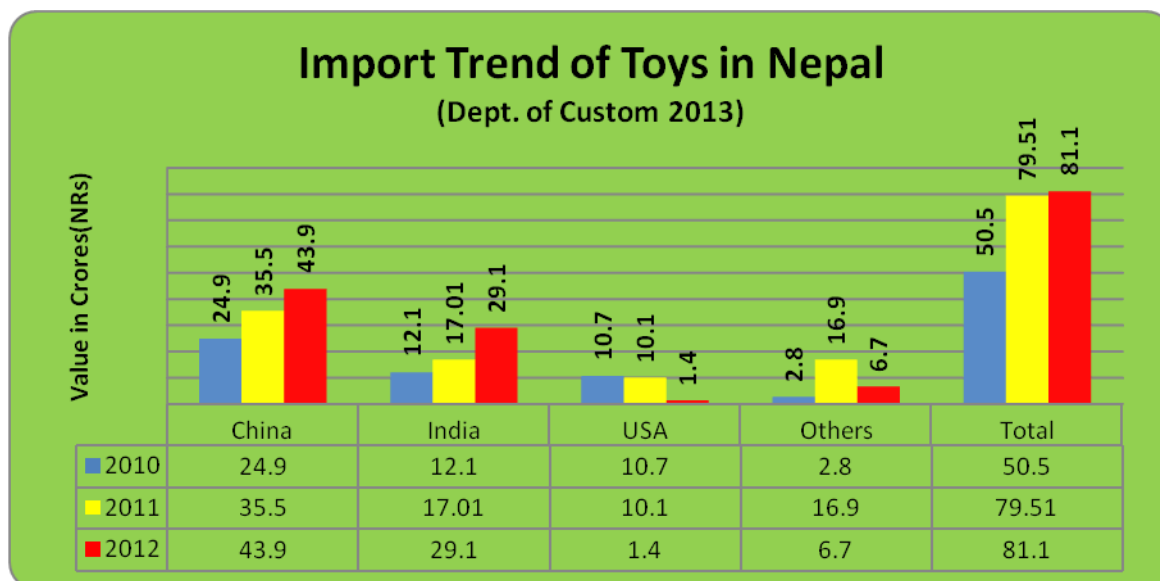
Different Children toys and dolls from different period

rattles and dolls made from clay. They also played with wooden tops, barrel hoops, and horses carved from wood. Till 1600s same pattern and composition was followed. After 1800 only, scientists began to discover and invent more materials to make toys. Not only could they use rocks, wood and clay, but they could also use cotton, leather and paper. After 1800s the invention of machine changes the production pattern of toys i.e. affordable and larger in volume. Machines also helped to make toys and some of their parts from metals like aluminum, tin and iron. Machine-made toys became very popular among toy makers and children because they could be shaped and cut to look like real-life things. Since plastic was cheap and easily molded material, it was largely started to use in children toys production from 1870s². The first plastic baby rattle was made out of this material. The plastic that most toys are made from today is called polystyrene and it was invented in the late 1920s. It is strong and can be stretched and shaped into different things. More toys were made with this type of plastic after 1945. Since then plastic toys covered the world market along with few wooden toys, metal toys and Barbie dolls. These days, most of the toys and dolls found in market are colorful along with addition of several life threatened chemicals like lead, cadmium, etc. to give additional features and attraction to children toys and dolls. If we move with historical timeframe, Chemistry plays an important part in the inventing and making of toys.

3. Children Toy in Nepal

Use of Children toys and dolls are not new in Nepalese context. Though there is not any formal or written history of children toys, it is believed that our ancestors use to play with wooden, clay and fabric toys. Still in remote areas we can find children playing with sand and stone as their play-set.

Table 1 Imported Children Product in NRs.



² http://portal.acs.org/preview/fileFetch/C/CSTA_015162/pdf/CSTA_015162.pdf

With the developmental changes, clay and wooden playing sets are being replaced by plastic and metal sets. In current context, majority of the market is covered by plastic sets. Almost every children toy is imported mainly from China (54%, 2012), India (36%, 2012) and USA (2%, 2012). Also toys and dolls are being imported from countries like Philippines, Thailand, Taiwan, Japan, etc. In 2012 only, NRs. 41 Cr. was invested on import of children playing sets i.e. toys, dolls, vehicles, etc. Though huge amount is being invested on Children toys sector, there is not any single governmental body to check or monitor the quality of such products. Since the news of children instruments manufactured in USA and China containing heavy metal are in rise, one can't deny that Nepalese market is also contaminated with chemical.³

4. Rationale of the Study

According to a report released by the Ecology Center's Environmental Health Project and the Washington Toxics Coalition, more than a third of all products tested contained toxic elements, the most common being lead, mercury, cadmium or arsenic. Other elements tested for were bromine, chlorine, chromium and tin. A recent Greenpeace-IPEN study measured toxic metals in 500 children's products purchased in five Chinese cities showed that one-third of tested products contained at least one toxic metal at levels of concern. **In China, the regulatory limit for lead in consumer products is 600 ppm. However the study turned up 48 store-bought products with levels exceeding this level. Lead-contaminated** products contained truly shocking levels ranging from 12,467-120,960 ppm. The Greenpeace-IPEN findings raise safety concerns for children.

Many studies have been made regarding heavy metals in children products in many countries in other parts of world but in case of Nepal there isn't any study have been made to date on this issue. As a result our children are unknowingly exposed to various chemicals inbuilt in the toys. Children have right to play in a safe and toxic free environment. Therefore, to analyze the condition of heavy metal in children toys available in the market this study has been planned to carry out. There is lack of any government initiatives to address these issues due to lack of country specific data and information organization CEPHED being the first inside the country to initiate this important study (related to toxic chemical presence in children play-sets) dedicated towards the protection of children the future of our nation.

5. Objectives of Study

- To study the concentration of heavy metals present in Children products especially toys available in Nepalese markets.
- Dissemination of study findings and aware people through various mass communications and forums.
- Campaign for safe toys for children and advocate for required legal and institutional framework to regulate toxic toys.

³ <http://208.67.23.5/~itsoftc/projects/tepc/commoditywise.php?txtmode=search>

- Test the differential hypothesis of toxic constituents of toys across countries, type/composition of toys, and color of toys.

6. Chemical Use and Children toys

With the revolution of technologies, children toys product is also affected by it. Before 1900s plastic toys were limited in volume. But with introduction of benefits of plastic material over wood, rubber and clay products, people started to move for plastic products. Particular trend is being supported by fast-paced development process and evolution of machines. As time goes by and popularity of toys became worldwide, manufacturer started to look for different aspects during production time i.e. flexible, attractive, and affordable, etc. There comes the idea of chemical use in children products which are highly toxic in terms of children's health perspective to give additional features such as flexibility, eye-catching colors, stability and molding capacity. Along with above characteristics, plastic material is cheaper and easy to access too. So this made chemical use as favorite one to have. Most of the chemicals found in children toys are hazardous to human health especially to children as they spent most of their time on these toys. The chemicals like lead, mercury, phthalates, cadmium, etc. are highly toxic and can cause severe health impacts.

Besides the benefits of toys these chemicals are highly toxic and of serious health concern which parents, children and retailers and even dealers are unaware of. The chemicals like lead, mercury, phthalates, cadmium, etc. are highly toxic and can cause severe health impacts. As children spend their most of the time with toys, these toxic chemicals present in toys sooner or later come into contact with children and the environment which is of major concern to deal with. As different chemicals do have different properties, same toy can have presence of multi chemical which can only be known after laboratory analysis or manufacturing period.

Few examples:

- ❖ Addition of flame retardants and plasticizers in plastics, impregnating agents in textiles or tanning agents in leather;
- ❖ Batteries that contain metals or light sticks of plastic that contain liquid with phthalates.
- ❖ Many toys (including Barbie dolls) are made of polyvinyl chloride (PVC), a chlorinated plastic whose production and disposal creates large amounts of highly toxic wastes.

Table 2 Toxic chemical and their impact on children's health⁴

Toxic Chemical	Health Impacts
Lead	Can cause brain development, learning and developmental problems including decreased IQ scores, shorten attention spans, attention deficit, hyperactivity, disorder and deficits in vocabulary. At high levels, lead can cause permanent brain damage and death.
Cadmium	Can cause bone pain, and fractures. Cadmium is a known carcinogen that can delay brain development in young children, hormonal effects, and altered behavior. Long-term exposure can cause cancer and kidney problems.
Mercury	Exposure to mercury can cause harmful effects, such as nerve, brain and kidney damage, lung irritation, eye irritation, skin rashes, vomiting and diarrhea, disruption of the nervous system, damage to brain functions, degradation of learning abilities, personality changes, tremors, vision changes, deafness, muscle incoordination and memory loss.
Chromium	Chromium can cause severe health effects. It can cause allergic reactions, such as skin rash. On breathing, chromium can cause nose irritations and nosebleeds. Other health problems that are caused by chromium are as: Upset stomachs and ulcers, Respiratory problems, Weakened immune systems, Kidney and liver damage, Alteration of genetic material, Lung cancer and on high exposure even lead to death.
Bromine	Exposure to bromine irritates eyes and throat. Serious health effects caused by bromine are as malfunctioning of the nervous system and disturbances in genetic materials. Also they cause damage to organs such as liver, kidneys, lungs and milt.
Phthalates	Impact on neurodevelopment stage, behavioral change, aggressiveness and problems with attention. Exposures may produce developmental defects or increase the risk of diseases such as cancer later in life. Also can cause adverse impacts on the reproductive system, kidneys, liver, and respiratory system.
Polyvinyl Chloride (PVC)	Can cause cancer, birth defects, reproductive and developmental disorders, low sperm count, undescended testes and liver dysfunction

7. Highlights from International studies on Chemical in Children Toys

- Test by Washington Toxics Coalition, the Michigan-based Ecology Center (2007) on 200 toys tested positive for lead, and nearly 50% were made of PVC (polyvinyl chloride, also known as vinyl), a plastic associated with the use of toxic additives.⁵
- As per test on children's toy by CSE lab– samples contained one or more phthalate, DEHP, DINP, DBP (di-n-butyl phthalate) and BBP (benzyl butyl phthalate) with 46% of the samples having phthalates exceeding the EU limit of 0.1 % by mass of plasticized material.
- Test by Centre for Science and Environment (2010), of the 24 samples 57 % of the China-made toys and 100 % of the Taiwan-made toys crossed the safe limit (100 ppm).⁶

⁴ <http://watoxics.org/files/ToyDatabaseFactSheetweb.pdf>

⁵ http://watoxics.org/files/Phthalates_Report.pdf

⁶ http://articles.economictimes.indiatimes.com/2010-01-15/news/28448661_1_chinese-toys-phthalates-imports

- Test by Greenpeace China (2011) found phthalates in 21 out of 30 samples of children's products. Nineteen of the 21 samples contained more than 10% phthalates by total weight, with one toy containing nearly half its weight in phthalates at 43.1%.⁷
- The study by IPEN in the Philippines (2011) measured toxic metals in 200 children's products. Approximately 30% of the products contained at least one toxic metal above levels of concern i.e. mercury, lead and cadmium. The data revealed 37 products (19%) that contained lead at or above the US regulatory limit (100 ppm). Twenty-seven samples (14%) contained more than one toxic metal. The study also found children's toy with mercury levels 4 – 5 times higher than the regulatory limit in the Philippines.⁸

8. International Standards for Chemical in Children Toys

In different part of world, there have been respective standards in place from respective countries with similar theme; to protect children's health. Among them International Standard **ISO 8124-1:2009**, European Standard **BS EN 62115:2005** and US CPSC standard has been mostly followed and recommended.⁹ Almost every standards talk about similar issues related with children product i.e. choking hazard, age factor, and presence of chemical in children toys like arsenal, cadmium, lead and phthalates.

- a. International Standard: The requirements in ISO 8124-1:2009 apply to all toys, i.e. any product or material designed or clearly intended for use in play by children under 14 years of age. They are applicable to a toy as it is initially received by the consumer and, in addition, they apply after a toy is subjected to reasonably foreseeable conditions of normal use and abuse unless specifically noted otherwise.¹⁰
- b. USA Standard: As per federal legal standard and CPSC standard, toys shouldn't have lead level more than 100 ppm whereas American Academic of Pediatric recommend lead limit of 40 ppm.
- c. European Toys Safety Directive (2009/48/EC): The European Toys Safety Directive intends to guarantee that any toys (including their packaging) placed on the market will not have any negative impact on the safety and health of the users i.e. children less than 14 years of age.¹¹

⁷ <http://www.greenpeace.org/eastasia/press/releases/toxics/2011/phthalates-plastic-toys/>

⁸ <http://www.ntn.org.au/healthy-children/top-10-office-entertainment-gadgets#sthash.ERrMP9jl.dpuf>

⁹ http://www.bureauveritas.com/wps/wcm/connect/bv_com/group/home/about-us/our-business/our-business-consumer-products/news+and+events/regulatory+bulletins/hk_toys_childrens_products_safety_ordinance

¹⁰ http://www.iso.org/iso/catalogue_detail.htm?csnumber=51974

¹¹ http://www.eurofins.com/media/2606934/toys_safety_2011.pdf

Table 3 Maximum Soluble Migrated Element in ppm, Toy Material¹²

Standard	Antimony	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium
USA	60	25	1000	75	60	90	60	500
EU	60	25	1000	75	60	90	60	500
ISO	60	25	1000	75	60	90	60	500
Canada	1000	1000	1000	1000	-	90	10	1000

Table 4 Country and their respective Toy Safety Standards¹³

Country	Regulation	Toy Safety Standard
Australia	BS EN 71-3: 1995 "Safety of Toys- Migration of Certain Elements"	-Max. lead exposure of 90 ppm
Canada	Hazardous Products Act R.S. c.H-3	-Items intended to sale do not contain more than 600 mg/kg (ie. ppm) total lead and 90 mg/kg "migratable" lead.
Japan	Japan Toy Safety Standard ST 2002, part 3	-90 mg/kg (ppm) of exposure to lead
New Zealand	AS/NZS ISO 8124.3:2003 entitled "Safety of Toys, Part 3: Migration of Certain Elements".	-Lead limit of 90 mg/kg
Philippines	2007-0032 "Regulations on the Issuance of a License to Operate to Companies that Manufacture, Import or Distribute Toys for the Philippine Market"	-The limit of 90 mg/kg (ppm) of lead exposure
South Africa	SABS ISO 8124-3:1997 "Safety of Toys - Migration of Certain Elements"	-The limit of 90 mg/kg (ppm) of exposure to lead
OSHA, NOISH	Permissible or recommended exposure limit of Bromine upto 8 hours	-0.1 ppm for air base contamination

Exposure Limits of Bromines¹⁴

OSHA PEL

The current Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for bromine is 0.1 ppm (0.7 mg/m³) as an 8-hr Time Weighted Average (TWA) concentration and 0.3 ppm (2 mg/m³) as a Short-Term Exposure Limit (STEL). A STEL is a 15-min TWA exposure that should not be exceeded at any time during a workday [29 CFR 1910.1000]

¹² Heavy Metals and Phthalates, Compliance Control, LEO Safety Confirmation

¹³ http://www.tierracast.com/safety_other.php

¹⁴ <http://www.cdc.gov/niosh/docs/81-123/pdfs/0064-rev.pdf> (Occupational Safety and Health Guideline of Bromine 1992)

NIOSH REL

The National Institute for Occupational Safety and Health (NIOSH) has established a Recommended Exposure Limit (REL) of 0.1 ppm (0.7 mg/m³) as an 8-hr TWA and 0.3 ppm (2 mg/m³) as a STEL. [NIOSH 1992]

ACGIH TLV

The American Conference of Governmental Industrial Hygienists (ACGIH) has assigned bromine a Threshold Limit Value (TLV) of 0.1 ppm (0.7 mg/m³) as a TWA for a normal 8-hr workday and a 40-hr workweek and a STEL of 0.3 ppm (2 mg/m³) for periods not to exceed 15 min [ACGIH 1991b].

9. International regulations to control chemical poisoning on children toys

a. The Convention on the Rights of the Child 1989 , A legally binding instrument

The Convention on the Rights of the Child is the first legally binding international instrument to incorporate the full range of human rights—civil, cultural, economic, political and social rights. In 1989, world leaders decided that children needed a special convention just for them because people under 18 years old often need special care and protection that adults do not. The leaders also wanted to make sure that the world recognized that children have human rights too.

The Convention sets out these rights in 54 articles and two Optional Protocols. It spells out the basic human rights that children everywhere have: the right to survival; to develop to the fullest; **to protection from harmful influences**, abuse and exploitation; and to participate fully in family, cultural and social life. The four core principles of the Convention are non-discrimination; devotion to the best interests of the child; the right to life, survival and development; and respect for the views of the child. Every right spelled out in the Convention is inherent to the human dignity and harmonious development of every child. The Convention protects children's rights by setting standards in health care; education; and legal, civil and social services.

By agreeing to undertake the obligations of the Convention (by ratifying or acceding to it), national governments have committed themselves to protecting and ensuring children's rights and they have agreed to hold themselves accountable for this commitment before the international community. States parties to the Convention are obliged to develop and undertake all actions and policies in the light of the best interests of the child.¹⁵ Nepal ratified this convention in September 1990 and Ministry of Women, Children and Social Welfare established in September 1995.

¹⁵ <http://www.unicef.org/crc/>

b. EU Initiative

The EU has been the first to regulate the use of chemicals like phthalates in toys. It has restricted the use of some phthalates in all childcare articles and toys to 0.1 % concentration by mass of the plasticized material. Toys containing Phthalates in higher quantities cannot be sold in EU countries. Since 1999, the EU has banned the use of six types of phthalates in children's products; as of February 2011, three of them have been scheduled for complete phase out in the EU market.¹⁶

c. United States Regulations

In USA (2008), Congress passed the Consumer Product Safety Commission Reform Act (CPSCRA), first-ever ban on lead and phthalates in children's toys and products by USA. Effective from February 10, 2009, Section 108 of CPSIA banned three phthalates (called DEHP, DBP and BBP) at levels greater than 1,000 ppm. The law also established an interim ban on three other phthalates, DINP, DIDP and DNOP, in toys and children's articles.¹⁷

d. Chinese Regulations

China's toy industry has been regulated since early 2007 by the expansion of the nation's compulsory certification system to include toy products. Regulations require manufacturers to apply for China Compulsory Certification (CCC) from the nation's Certification and Accreditation Administration (CNCA). After the regulation formation, no toy products without CCCs has been allowed to leave factories, be sold or be imported into China. In case of chemical like phthalates, China doesn't have any regulations to control or monitor the use of phthalates in toys.

e. India

The Bureau of Indian Standards (BIS) has issued three sets of standards covering safety aspects of toys, but none covers phthalates - and even these standards are voluntary in nature. Strangely, while Indian toymakers are not required to adhere to any mandatory safety standards, the country had banned the import of toys not meeting the standards.¹⁸

f. Singapore

Under the Consumer Protection (Consumers Goods Safety Requirements) Regulations 2011, SPRING SINGAPORE can stop the sale of unsafe products and issue a public notice to caution consumers against such products. Anyone who continues to supply such unsafe products shall be liable to a fine of up to \$10,000 or be jailed for up to two years or both.¹⁹

¹⁶ http://environment.about.com/od/healthandchildren/a/toxic_toys.htm

¹⁷ <http://www.greenschools.net/section.php?id=42>

¹⁸ <http://www.peopleandplanet.net/?lid=29232&topic=23§ion=37>

¹⁹ <http://www.spring.gov.sg/NewsEvents/PR/Pages/Recall-of-Unsafe-Ride-on-Animal-Toy-20121213.aspx#.UbgVdhLfSo>

g. Philippines

House Bill No. 6552 related to toxic chemicals and other hazardous substances seeks to regulate the importation, manufacture, sale and distribution of children's toys, school supplies, childcare articles and other related products containing toxic chemicals has been passed. The measure seeks to direct the Food and Drug Administration (FDA) to prepare a list of chemicals and substances used in children's products which cause or may cause harm, injury, or death to children, identify banned or prohibited substances and chemicals used in the manufacture, production, and preparation of children's products and identify maximum levels and limits and reference values for certain chemicals used for the same.²⁰

h. Nepal

In case of Nepal, despite of several studies and push-up work been done by CEPHED with respect to have regulation on Chemical in Products including Children Toys, no governing bodies or private institution has developed any standards or guidelines or regulations to check the content of heavy metals in children products including mercury, lead, cadmium, phthalates, etc. Children toys accessible in market are freely imported distributed and sold without having any test and monitoring activities.

10. Materials and Methodology

10.1 Literature review

Various articles, reports and paper were collected and review thoroughly. From the literature review several worldwide organization such as Green Peace International, International POPs Elimination Network (IPEN) have found to be carried out several study in China, India and USA and found most of the plastic children toys were contaminated with different chemicals at the level of health concern.

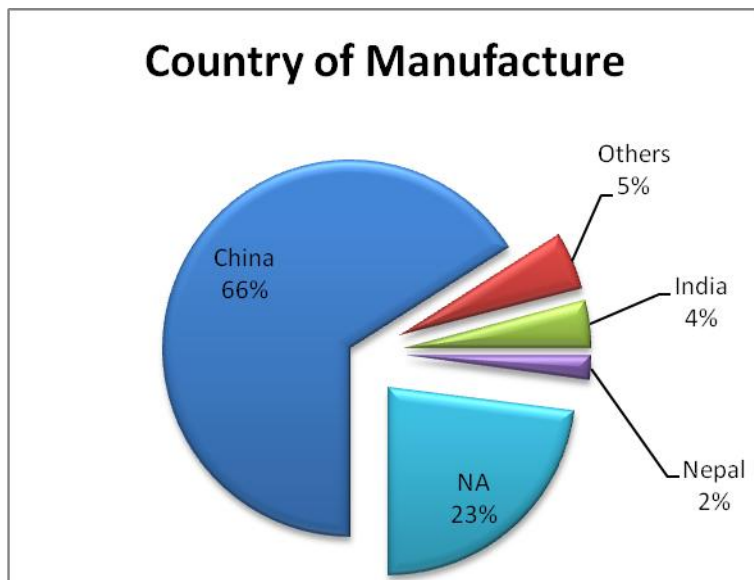
10.2 Field Study and Survey:

Detail market observation as well as Questionnaire survey with parents, teachers, retailers, dealers of toys were done to know types, country of manufacture, materials, color of the most preferred toys, its constituents, types, health impact faced, durability, price about the different toys available in the market. Three different set of questionnaire were developed covering the area of manufacturing date, expiry date, composition of toy and color of toys, preferable ranks and its reasons, safety factors, quality of toys, government procedure and requirements while procuring the toys, monitoring agencies and their roles. Developed questionnaire samples were surveyed from various locations inside Kathmandu, Bhaktapur with market dealers and retailers, parents and schools (administration and teachers).

²⁰ <http://www.interaksyon.com/article/44923/house-passes-bill-regulating-toxic-chemicals-in-childrens-toys>

10.3. Sampling:

Toys Samples were purchased from local vendor to retailer and departmental stores via various locations like Banepa, Asan, Mahabauddha, Pulchowk, Baneshwor, Lagankhel and Balkumari. Since Kathmandu is country capital having high chances of finding variety of toys from national as well as international brand, we opted to buy more sample from Kathmandu market. In total 100 samples were purchased from the market. Sample collection includes variety of children toys such as balls, guns, cup, water bottle, helicopter, kitchen tool, watch, etc. While purchasing sample, color was kept in mind i.e. diversification in toy color was chosen. Also samples were purchased on basis of composition of production material i.e. fabric (4%), rubber (7%), paper (3%), wood (9%), plastic (63%) and metal (11%). **Toy Sample log** is mentioned in **Annex 1**.



Sample according to manufacturing countries

Samples were coded and sent to Nepal Bureau of Standard and Metrology. The concentrations of heavy metals in the collected samples were analyzed by using X-ray Fluorescence (XRF) analyzer in the lab of NBSM. The XRF instrument shows the content of elements in the surface layer of an object. Energy transfers are measured by exposing the object to X-ray or gamma radiation.

10.4 Working Principle of XRF:

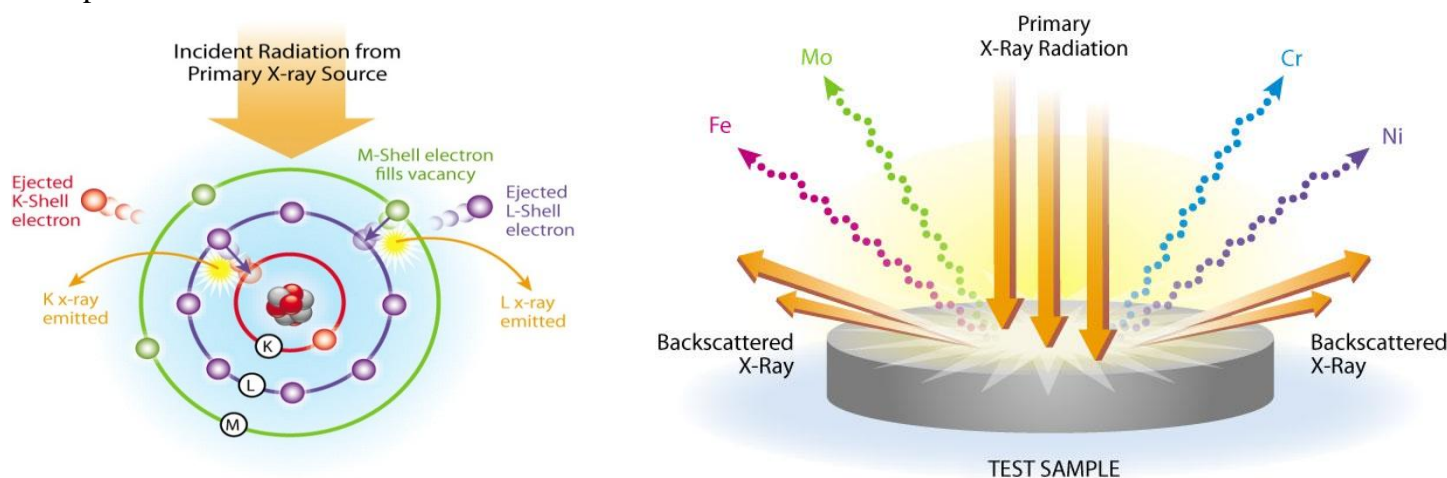
The analysis of major and trace elements in geological materials by XRF is made possible by the behavior of atoms when they interact with X-radiation. An XRF spectrometer works because if a sample is illuminated by an intense X-ray beam, known as the incident beam, some of the energy is scattered, but some is also absorbed within the sample in a manner that depends on its chemistry.

When this primary X-ray beam illuminates the sample, it is said to be excited. The excited sample in turn emits X-rays along a spectrum of wavelengths characteristic



Lab testing of samples using XRF

of the types of atoms present in the sample. The atoms in the sample absorb X-ray energy by ionizing, ejecting electrons from the lower (usually K and L) energy levels. The ejected electrons are replaced by electrons from an outer, higher energy orbital. When this happens, energy is released due to the decreased binding energy of the inner electron orbital compared with an outer one. This energy release is in the form of emission of characteristic X-rays indicating the type of atom present.



11. Result and Discussions

As the methodology adopted to study this issues comprises of market survey, literature review, questionnaire survey with the parents, schools teachers and administration, dealers. Finding from these survey are summarized here. ,

11.1 Analysis Based on Sampling:

Analysis based on sample purchase time and sample log preparation:

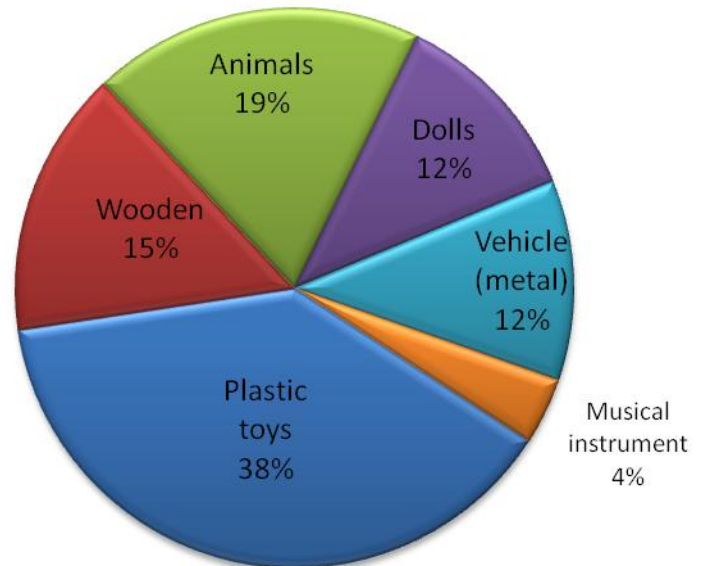
- ✚ None of the retailer is aware about the chemical certification.
- ✚ Though in most of the toys, there was clear sign regarding information and warning of not to sale product for children below 3 years of age, parents and retailers were found guilty of showing negligence in such critical information and buying or selling such product to children below 3 years of age.
- ✚ There is not any authorized governmental body working on particular issue. i.e. chemical presence in children toys and dolls.
- ✚ Few imported products from China as well as other countries were found to have information about international tests. i.e. Tested according to international standards.
- ✚ Most of market is covered by toys made up of plastic material while dolls are made up of fabric and cotton one. There was very little variety of wooden and magnetic toys available in market.

11.2 Analysis based on questionnaire survey:

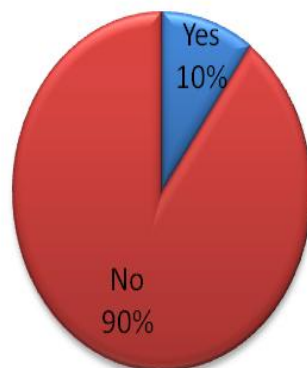
11.2.1 Factors considered by Schools while purchasing the Toys for their schools

- Very few schools (10%) **check labeling during** sample purchase. They hardly bother to know about the chemical presence.
- None of the school is aware about the health impact due to toys and dolls on children.
- Details of the factors considered by the School while purchasing the toys for their schools are given below diagrams.

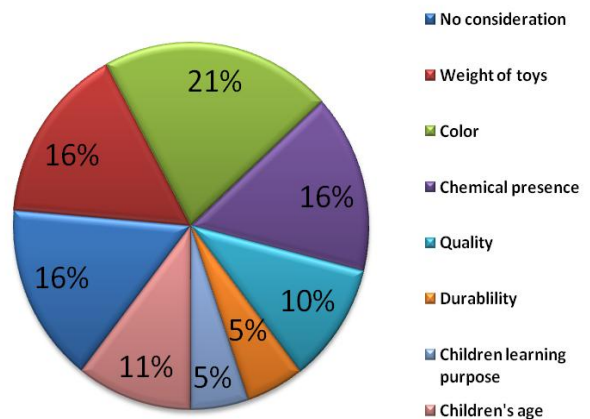
Most Favorable Toys By Schools



Parents looks for Labling while purchaging



Factors considering while purchasing Toys by Schools

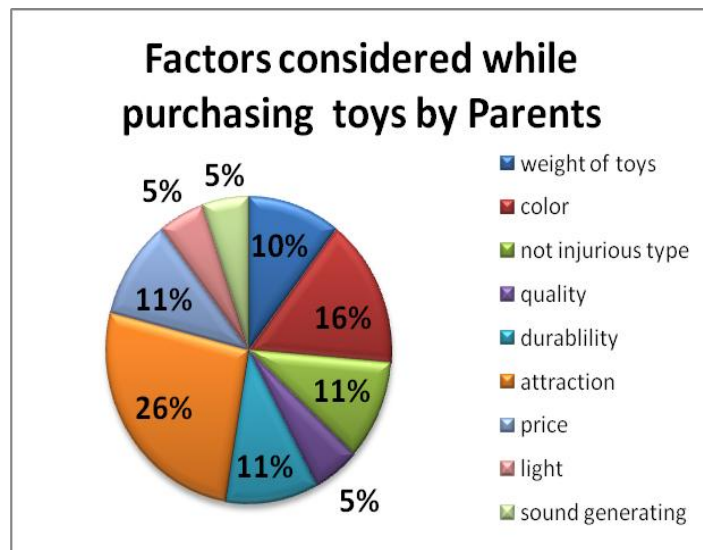
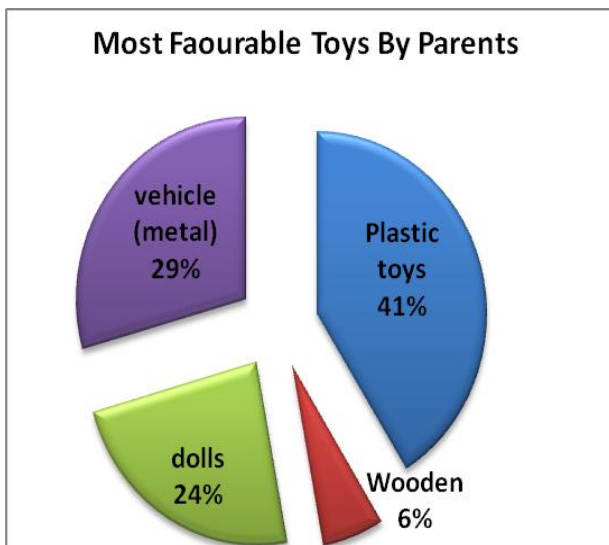


Information considered during toy purchase of toys by Schools

11.2.2. Factors considered by the Parents while purchasing the toys for their babies

From the analysis obtained from questionnaire form developed for Parents, following information were drawn.

- None of the family checks the labeling during toy purchase.
- None of parents are aware about chemical presence in toys.



Factors considered during toy purchase by Parents

11.2.3. Factors considered by the Parents while purchasing the toys for their babies

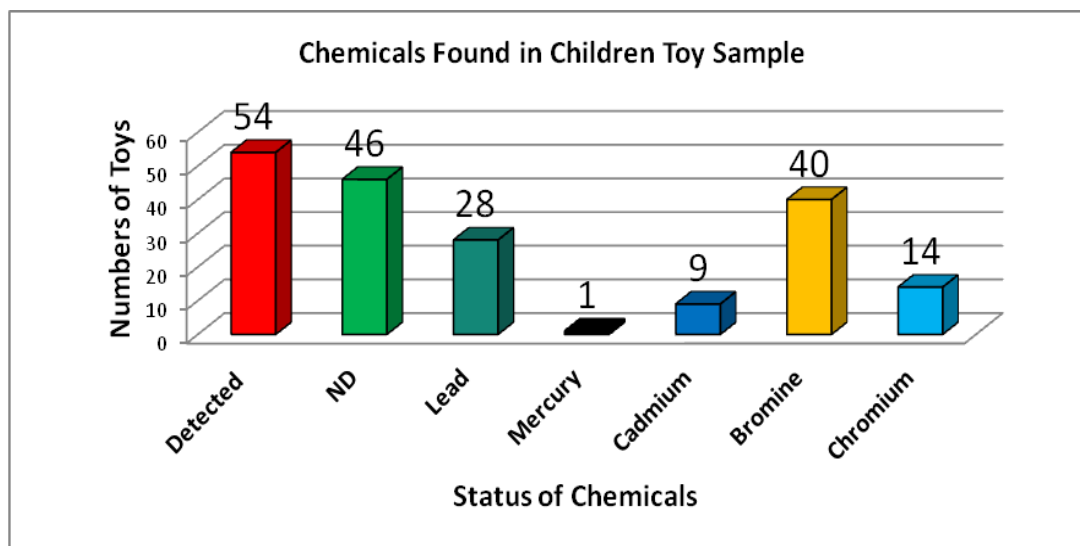
From the analysis obtained from questionnaire form developed for **market survey** with retailers, following information were drawn

- Almost every shopkeeper sells toys, puzzle and vehicles whereas some sells musical instrument too.
- None of the retailer checks any of information regarding manufactured date or expiry date as well as chemical constituents.
- Most of the retailer import toys and dolls from Chinese market whereas few opt. for Indian market (34%) as well.
- There are not any government procedure/requirement retailers and dealers need to fulfill during import or sale of toys and dolls to obtain chemical related data sheets and any certification. Also there are no single monitoring agencies available in the country to monitor and inspect children toys.

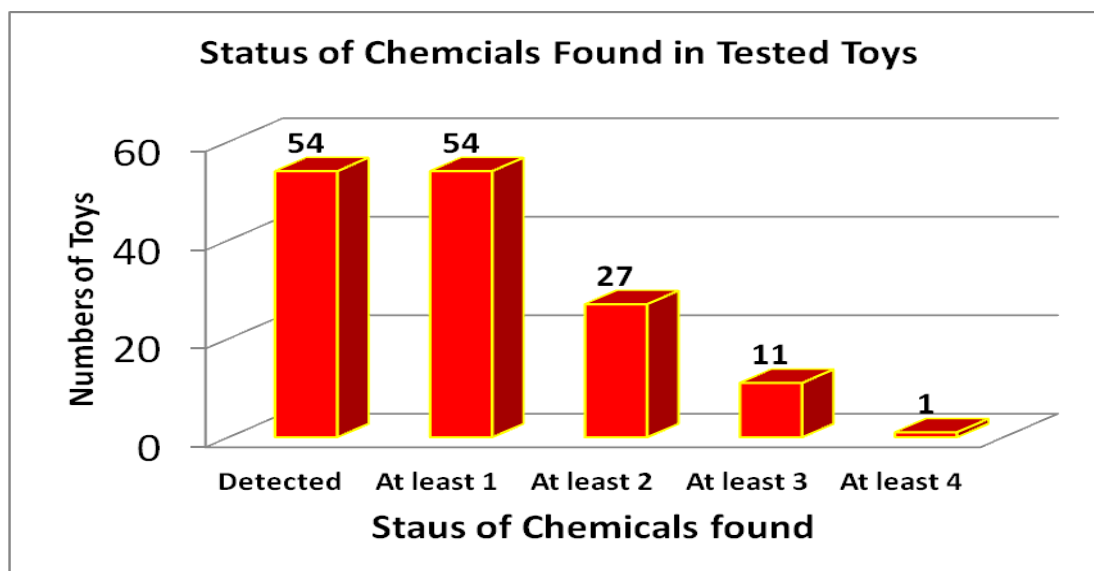
11.3 Result and Discussion from Chemical contamination study of the children toys

Key Findings from the conducted laboratory analysis for the chemical presence in studied samples of children toys can be summarized as follows and details of the samples and their tested value can be found in Annex 1. :

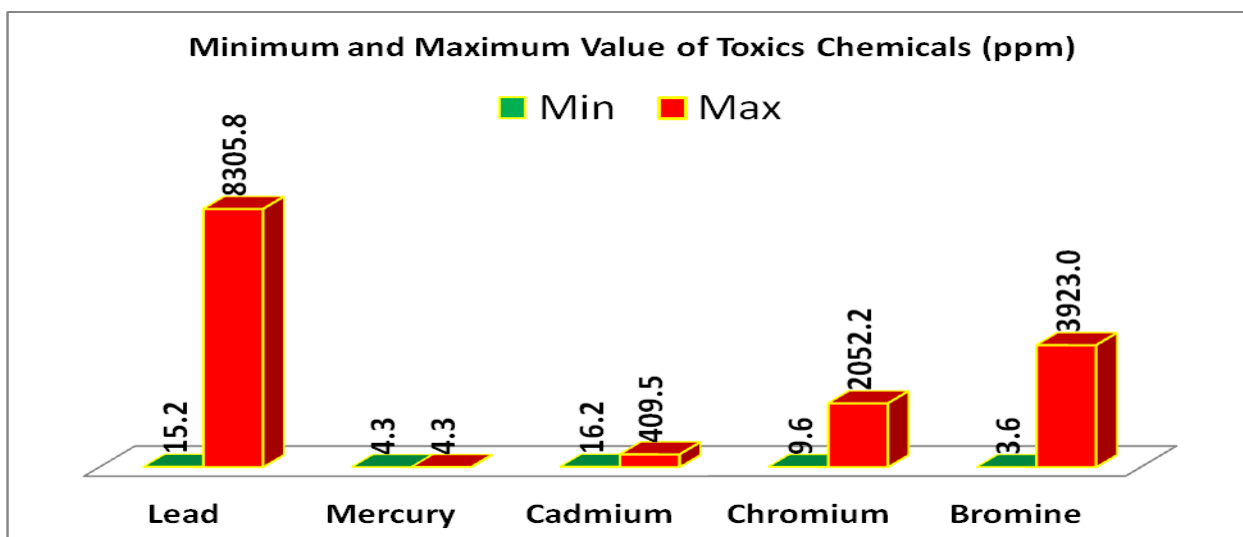
- The chemical contamination of the toys imported and sold in Nepal that our children plays in home and schools are very serious. 54% of the samples do have chemical contamination ranges from 3.6 ppm to 8305.8ppm. Whereas 46% of toys samples has not contain any chemicals.
- Out of positive result of chemical contaminated toys samples, 28 samples contain Lead, 1 Samples contains Mercury, 9 samples contain Cadmium, 14 samples contain Chromium and 40 samples contain Bromines.
- 54% samples have at least **ONE** Chemicals, 27 % have at least **TWO** chemicals, 11 % of samples have at least **THREE** chemicals and 1 % samples have at least **FOUR** Chemicals whereas 46% samples does not have any hazardous chemicals i.e. heavy metals at the detectable level.
- The ranges of the chemicals found in different samples are tabulated below.



Percentage of toxic chemical found in Children Toys



Status of chemical found in tested toys



Maximum and Minimum Value of Toxic Chemicals found in Children toys

Table 5. The ranges of the chemicals found in different samples are summarized below.

Chemical Contamination	Percentage of Samples	Chemical Concentration	Standard (ppm)
LEAD	28	15.2 ppm - 8305.8 ppm	USA 90 (46.42% > 90) China : 600
MERCURY	1	4.3 ppm	Philippines 1(100% > 1)
CADMIUM	9	16.2 ppm to 409.5 ppm	USA 75 (33.33% > 75)
CHROMIUM	14	9.6 ppm to 2052.2 ppm	USA 60 (42.85% > 60)
BROMINE	40	3.6 ppm to 3923.00 ppm	CDC USA 0.1 (100% > 0.1)
CEPHED, 2013			

1. 28% of samples have lead content among which 46.42% of samples have lead content higher than US guidelines. i.e. 90 ppm. Lead content ranges from 15.2ppm to 8305.8 ppm.
2. 1% of samples have highly toxic mercury contain which is higher than Philippines standard of 1 ppm.
3. 9% of sample has cadmium contain ranging from 9 ppm to 409.5 ppm. 33.33% of sample has cadmium contain higher than US Standard i.e. 75 ppm.
4. 40% of sample has bromine contain ranging from 3.6 ppm to 3923 ppm
5. 14% of sample has chromium contain ranging from 9.6 ppm to 2052.2 ppm among which 42.86% has chromium contain higher than the US Standard of 60 ppm.

11.4 Test of Research Hypothesis

11.4.1. Whether chemical contamination varies across the manufacturing Countries?

From sample, it was obtained that 66% of market is covered by Chinese product whereas in 23% of product there was not anything mentioned about product description i.e. manufactured country. 4% of product were Indian whereas 2% of product where Nepalese.

Among 66 of Chinese Toys, 56.06% samples do have toxic chemicals whereas none of the Nepalese product was found to have chemical presence. In case of India, 75% of samples were found to have chemical presence in it whereas 56.52% of sample from other countries like Thailand, USA, etc. have chemical presence.

Table 6: Country wise chemical contamination in children toys

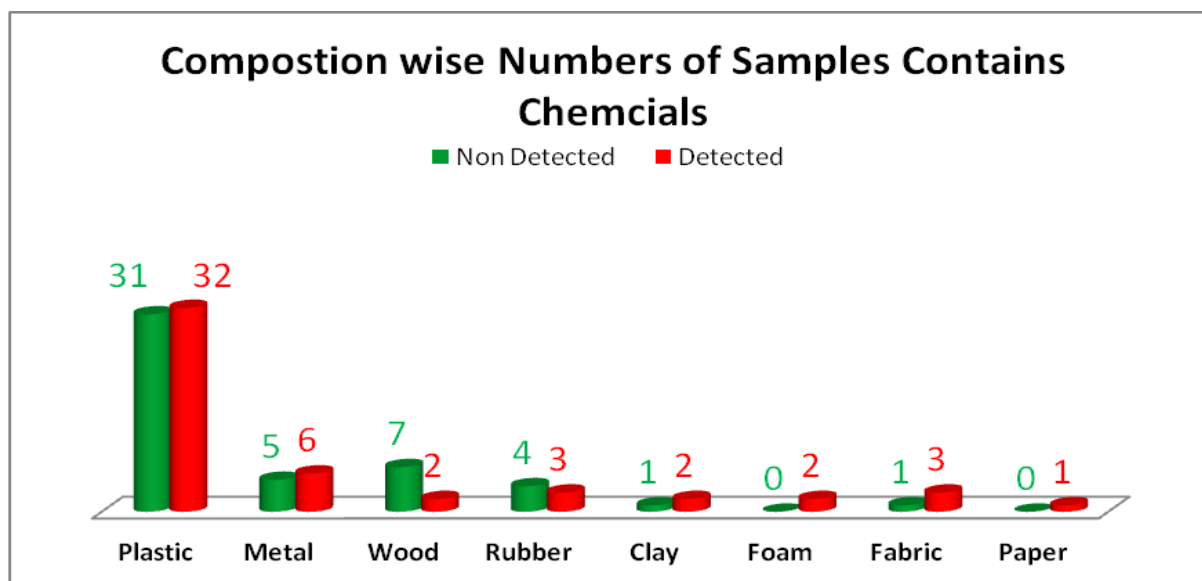
	China	NA	Nepal	India	Other
Total Toys (%)	66	23	2	4	5
Detected (%)	56.06	56.52	0	75	20
Non Detected (%)	43.94	43.48	100	25	80

From above table, definitely the hypothesis is true as chemical contamination varies across the countries. However, there are any particular trends illustrated. It is clear that the tough Nepalese toys are not much available in the market, they are found to be chemicals free. However our samples were very small from the Nepalese toys.

11.4.2 Whether chemical contamination varies across the toys composition?

From the details data analysis, 50.79% (32 out of 63) of plastic toys were found to have chemical presence in it while 54.55% (6 out of 11) of toys made up of metal were found

with chemical contamination. Similarly, each toys composed of paper and foam have chemical presence in them. Among composed material, wood was comparatively found to have less or no chemical presence with only 22% have chemical presence in them.

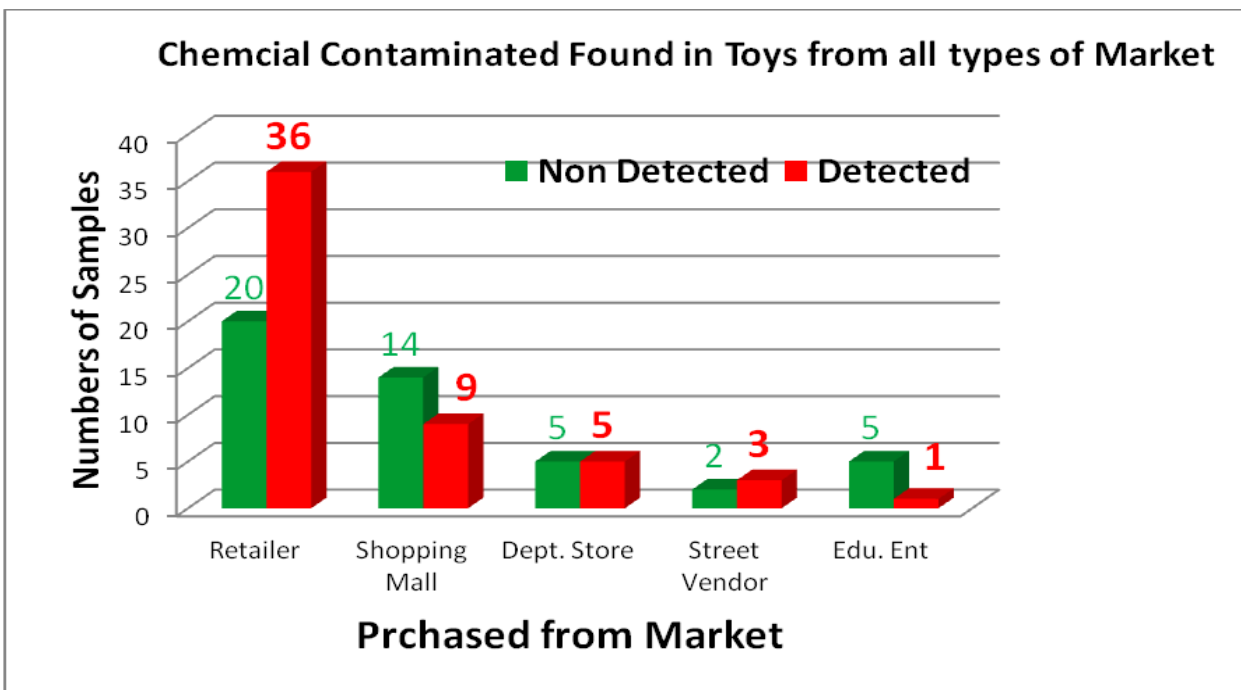


Chemicals analysis based on composition of toys

Tough this hypothesis seems to be valid as the chemical contamination varies across the samples composition, there are no particular trend can be predicted.

11.4.3 Whether chemical contamination varies among the toys purchased from different market?

During sample purchase, children toys were purchased from street vendors, retailers, shopping malls, departmental stores and including educational enterprises. Maximum up to 64.29% (36 out of 56) of children toys purchased from retailer market, 39% toys purchased from shopping malls, 50% toys from purchased from Departmental stores, 60% toys purchased from Street Vendor and 16.67% (1 out of 6) toys purchased from educational enterprises have toxic chemical presence. Thus this is also true assumption that the chemicals found varies among the toys purchased from different market. It can be said that none of the market selling children toys products are entirely safe. For details , see the diagram below.



Sample Analysis based on market from where toys were purchased

12 Conclusion

Study shows that Nepalese children are at high risk of health hazards due to high level of toxic presence in children toys. Most of the children toys found in Nepalese market have highly toxic chemical contain i.e. highly toxic lead contain ranging from 3.6 ppm to 8305.8 ppm. Though majority of children toys contain chemicals, there is no proper labeling about any of the toxic chemical in any of the products. There are neither any legal frameworks nor any authorized government agencies to monitor this children product sector. Besides, there is lack of awareness among consumers, retailers and even governmental officials about the chemical presence in children toys. Since toys are manufactured with the view to attract children less than 14 years of age, children are the major affected groups of having any chances of exposure to mentioned toxic chemicals. Since children's health is at high risk, serious move from governmental bodies and business communities to protect children health and well-being is highly required. Since majority of the Nepalese market is governed by imported children products, government needs to interrupt or intervene the market policy and set up the rules and regulations to remove the children product with chemical presence from market or reaching the market.

13 Recommendation

Based on the study conducted and laboratory results, following recommendations were made for the overall situational improvements.

1. Allocate the responsible government authorities, institutions to regulate chemicals in products including children toys with full flagged infrastructures of standard laboratories.
2. Enact proper Policy, Act, Regulation, Standard, Labeling and Certification system to regulate chemicals in product especially children products.
3. Develop chemical safety road map of the country
4. Regulate the importation of toxic toys by having chemical certification compulsory for import, sale and purchase.
5. Toys in the school, play ground, children parks, and fun parks need to be tested for chemical contamination and monitored regularly.
6. Schools administration, parks owners and even parents need to look for chemical certification and labeling while purchasing the toys for their children.
7. Mass awareness raising among all parents, teachers, educational and recreational institutions as well as concerned government agencies about the impact of chemicals in products.
8. Keep hazardous chemicals away from Children`s Toys to ensure right to play safe of the children.

ANNEX 1.Sample Log of Children Toys, Dolls

S. No./ Sample Code	Name	Composition		Heavy Metal Concentration in tested Children Toys (ppm)				
				Lead	Mercury	Cadmium	Bromine	Chromium
01NPL 05242013	Water Bottle	Plastic	Pink	-	-	-	-	-
02NPL 05242013	Writing Board	Plastic	Red/White	-	-	-	7.4	-
03NPL 05242013	Jhinga	Plastic	Pink	-	-	-	-	-
04NPL 05242013	Tennis Bat	Plastic	Green	-	-	-	215.9	-
05 NPL 05242013	Ball	Stretchable Plastic	Pink	-	-	-	-	-
06 NPL 05242013	Cup	Sand	Red/White	79	-	-	-	-
07 NPL 05242013	Ball	Sponge Form	Mixed	-	-	-	17.6	-
08 NPL 05242013	Goggle	Plastic	Red	23.3	-	-	-	40
09 NPL 05242013	Doll	Plastic	Mixed (yellow/white)	50.6	-	-	-	-
10NPL 05242013	TT Bat	Wood	Red/Black	-	-	-	-	-
11NPL 05242013	Helicopter	Plastic	White	-	-	-	-	-
12 NPL 05242013	Puzzle	Plastic	Green	68.03	-	21.6	802.1	-
13NPL 05242013	Mouth harmonium	Steel	Black	-	-	-	-	-
14 NPL 05242013	Gun	Plastic	Black	104.5	-	-	30.1	-
15NPL 05242013	Watch	Plastic	Black	36.8	-	58.3	669.4	-
16 NPL 05242013	Kitchen Tool	Plastic	Silver	119.8	-	-	27.5	18.7
17 NPL 05242013	Gun	Plastic	Red	-	-	-	5.6	-
18 NPL 05272013	Gun	Plastic	Black	128.3	-	-	12	23.1
19 NPL 05272013	Angry Bird	Plastic	Brown/Green	-	-	-	4.4	-

20 NPL 05272013	Ring	Plastic	Mixed (red, yellow, green and blue)	-	-	-	-	-
21 NPL 05272013	Durbin	Plastic	Silver/Black	107.8	-	-	2347.8	-
22 NPL 05272013	Kitchen Playset	Plastic	Mixed	-	-	-	-	-
23 NPL 05272013	Magic Ball	Rubber	Red	-	-	-	-	-
24 NPL 05272013	Camera	Plastic	Silver	43.5	-	-	3923	-
25 NPL 05272013	Lightroller	Metal/Plastic	Orange	-	-	-	-	-
26 NPL 05272013	Crystal Ball	Plastic	Mixed	-	-	-	8.7	-
27 NPL 05272013	Chinchin	Plastic	Yellow/Pink	-	-	-	3.6	-
28 NPL 05272013	Heli-Coptor	Plastic	White/Yellow	-	-	-	1348.8	16.9
29 NPL 05272013	Bubble	Plastic	Green	22.1	-	-	26.8	-
30 NPL 05272013	Whistle	Plastic	Pink	-	4.5	-	28.4	-
31 NPL 05252013	Candle	Plastic	Mixed (Yellow, Red, Orange and Green)	-	-	-	-	-
32 NPL 05252013	Water Bottle	Plastic	Blue	-	-	-	-	-
33 NPL 05252013	Water Bottle	Plastic	Pink	-	-	-	-	-
34 NPL 05252013	Sponge Ball	Sponge	Green	-	-	-	48.9	-
35 NPL 05252013	Cosmetic Set	Plastic and Color	Mixed (Pink)	-	-	-	-	-
36 NPL 05252013	Happy School time	Plastic	Green	-	-	-	-	-
37 NPL 05252013	Car	Metal	Black	251.4	-	34.7	-	123.8
38 NPL 04232013	Baaroque	Plastic	Pink/Yellow/Green	-	-	-	-	12.2
39 NPL 04232013	Target Gun	Plastic	Green/yellow	-	-	-	10.2	-

40 NPL 04232013	Chamcham	Plastic	Pink	-	-	-	-	-
41 NPL 04232013	Mobile game	Plastic	Blue	31.9	-	-	2019.2	-
42 NPL 04232013	Baja	Plastic	Green	-	-	-	-	-
43 NPL 04232013	Puzzle	Plastic	Mixed	96.2	-	20.9	2444.8	-
44 NPL 04232013	Lollipop	Plastic	Mixed	-	-	-	50.4	-
45 NPL 04232013	Mask	Plastic	Purple	81.3	-	-	18.9	26.7
46 NPL 04232013	Toy sand	Plastic	Pink	-	-	-	-	-
47 NPL 04232013	Candle	Plastic	White/Pink	-	-	-	-	-
48 NPL 04232013	Animal Puzzle	Plastic block	Mixed	-	-	-	-	-
49 NPL 04232013	Metal Ganesh	Metal	Gold	-	-	-	57	-
50 NPL 04232013	Mask	Plastic	Red	-	-	-	-	97.6
52 NPL 05292013	Solitaire GAME	Plastic	yellow/Blue/Red	-	-	433.3	-	-
53 NPL 05292013	Baby Mickey Tug Boat Rattle	Hard Plastic	Red, Y, G, B, Gray	-	-	-	-	-
54 NPL 05292013	Toy Car	Metal w plastic	GRAY, RED, SKYBLUE	144.8	-	-	-	-
55 NPL 05292013	Toy Car	Metal w plastic	yellow/white	-	-	-	-	-
56 NPL 05292013	Doll	Rubber	Skin colour	-	-	-	-	-
57 NPL 05292013	Magnetic 123	Plastic	Mixed Colour	-	-	-	-	-
58 NPL 05292013	Woden Clock	Wood	Sky Blue and mixed	-	-	-	-	-
59 NPL 05292013	Ka Kha Woden Block	Wood	Mixed Colour YBR	-	-	-	-	-
60 NPL 05292013	Geometric Shapes	Wood	Mixed Colour	-	-	-	-	-
61 NPL 05292013	Grape	Rubber	Brown/Green	-	-	-	-	-

62 NPL 05292013	Swimming Tubes	Plastic Soft	Pink and Mixed	-	-	-	-	-
63 NPL 05292013	Wood bag puzzle	Wood	mixed	-	-	-	-	-
64 NPL 05292013	Tither	Plastic	Colorless	-	-	-	-	-
65 NPL 05292013	Wooden Board Puzzle	Wood	Blue and yellow Mixed	-	-	-	18.5	-
66 NPL 05292013	Wooden Board Puzzle	Wood	Yellow and mixed	27.2	-	-	-	-
67 NPL 05292013	Wild Animals	Rubber	Mixed	971.5		16.2	102.8	226.6
68 NPL 05292013	Dinoceros	Rubber	Pink and Yellow	-	-	-	-	-
69 NPL 05292013	Magnetic letters	Plastic	Mixed	15.2	-	-	-	-
70 NPL 05292013	Dall	Cotton Febrick	Skin and yellow	-	-	-	7.2	9.6
71 NPL 05292013	Pizza Party Creatives	Hard Papers	Mixed	47.5	-	-	6.4	111.1
72 NPL 05292013	Matchbox Car	Metal	Yellow and Black	-	-	-	-	-
73 NPL 05292013	Tenish Ball Nivia	Rubber and Cotton	Red	73.2	-	-	21.8	120.7
74 NPL 05292013	Spider Man Dall with key	Hard Plastic	Red and Yellow	21.4	-	-	7.5	-
75 NPL 05292013	Chimpanzee Dall	Hard Plastic	Gray and yellow , orange	-	-	-	39.2	-
76 NPL 05292013	Funny Blocks Puzzles	Hard Plastic	Mixed	-	-	-	-	-
77 NPL 05292013	Cup	Clay	White	-	-	-	-	-
78 NPL 05292013	Goggle set	Hard Plastic and soft foam	Blue	-	-	-	27.5	-
79 NPL 05292013	Ball Golden	Rubber	Golden red and blue	1121.9	-	76.9	-	-
80 NPL 05292013	Photo Frame	Plastic	Goden yellow	96.1	-	-	43.1	-

81 NPL 05292013	Baby Toys Jhun Jhun	Hard Plastic	Green and Gray	-	-	-	-	-
82 NPL 05292013	Ring Block Sets	Plastic	Mixed	-	-	-	-	-
83 NPL 05292013	Globe	Plastic and Paper	Mixed	57.4	-	-	29.4	-
84 NPL 05292013	Flower	Fabric	Red and Green	-	-	-	13.6	-
85 NPL 05292013	Butter Fly	Hard Plastic	Orange and Oink	-	-	-	-	-
86 NPL 05292013	Ring Doll	Cotton and Metal	Yellow and Orange	-	-	-	6.9	-
87 NPL 05292013	Doll Hanging	Cotton and Metal	Blue and White	-	-	-	231.4	13.7
88 NPL 05292013	Doll fish girl	Plastic	Skin and Mixed	-	-	-	-	-
89 NPL 05292013	Dog	Cotton and fabrick	Blue, organge	-	-	-	-	-
90 NPL 05292013	Horse	Plastic	Red and Green	55.7	-	-	14.9	-
91 NPL 05292013	Doll Male hang	Plastic and Fabric	Skin and Mixed	3725.3	-	-	-	-
92 NPL 05292013	Pop Sic Los	Metal/glass	Blue	-	-	-	-	-
93 NPL 05292013	Cup	Clay	Yellow	8305.8	-	490.5	-	2052.2
94 NPL 05292013	Car	Metal	Red	281.7	-	19.9	-	-
95 NPL 05292013	Car	Metal	Silver	-	-	-	-	-
96 NPL 05292013	Baja	Plastic	Orange	-	-	-	-	-
97 NPL 05292013	Wooden Block	Wood	Yellow	-	-	-	-	-
98 NPL 05292013	Bowl	Plastic	Yellow	-	-	-	-	-
99 NPL 05292013	Truck	Plastic	Yellow	-	-	-	-	-
100 NPL 05292013	Dall	Plastic	Yellow	-	-	-	7	-
101 NPL 05292013	Bal	Plastic	Orange	-	-	-	27.4	-

ANNEX 2: QUESTIONNAIRE FORM

ANNEX 2.1 QUESTIONNAIRE SURVEY (Market)

Name of Shop:

Respondent (Name and Address)

1. Types of toys found in your shop.

a. Doll

b. Ball

c. puzzle

d. others

(try to obtain the list and types of dolls imported and sold)

2. Manufacture date.....Date of Expiry.....

3. Name of the countries from where you import the dolls (Country of origin)

4. What does the dolls made of (Plastic, Wood, Tin , Rubber etc.) you mostly import?

5. Which one is the most preferred / selling by the children?

Particular	Name s	Remarks
Preferable Dolls	1 st 2 nd 3 rd 4 th 5 th	
Preferable colors		

6. Do you consider the safety factors of your imported dolls items? YES/NO

If YES , what are the safety , Chemical, color, standard, certificate

7. Do you check the quality of such toy's during the import?

8. What are the factors consumers considered mostly while purchasing dolls?

9. What are the government procedure /Requirement you need to fullfil while import and sale of these children dolls?

10. Is there any monitoring agencies are there for monitoring and Inspecting children toys ?

11. Any other information you want to share?.....

ANNEX 2.2 QUESTIONNAIRE SURVEY FOR PARENTS/School

1. Which one is the most favorable toy (Color and Types) for your child?
2. What are the information you consider of the toys while buying for toys for your children?
3. Do you know about the health impact of toys on your children? YES/NO

If YES, list few you remember

4. How long your children play with the toy in a day?
.....hours /day
5. Does your child place toys in their mouth during playing YES/NO

If Yes,times /Day
6. Does your child get any health problem during playing or after playing with the toy?
YES/NO

If yes what kind of health problem?
7. Do you know about the heavy metal presence in the toys?

ANNEX 2.3 CUSTOM DEPARTMENTS

1. What are the children products are being imported and how much

What	How much /Year	Remark

2. Name of the countries from where you import the dolls (Country of origin)
3. Do you check the quality of such toy's during the import?
4. What are the government procedure /Requirement need to be fulfilled while import and sale of these children dolls?
5. Is there any monitoring agencies are there for monitoring and inspecting children toys market or not?
6. Any other information you want to share?.....