

Emerging Food Safety Issues and Theirs Implication for Indonesian Food Industries

Presented at
FOODREVIEW SEMINAR
Emerging FOOD SAFETY Challenges
Bogor;
24 November 2011

PURWIYATNO HARIYADI

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- Dept Ilmu dan Teknologi Pangan, Fateta, IPB
- FOODREVIEW Indonesia

Food Safety ?

**“... access to nutritionally adequate and
SAFE food is a right of each individual.”**

[FAO/WHO World Declaration on Nutrition 1992]

Food Safety ?

“... access to nutritionally adequate and SAFE food is a right of each individual.”

[FAO/WHO World Declaration on Nutrition 1992]

Food security exists when all people, at all times, have physical and economic access to sufficient, SAFE and nutritious food to meet their dietary needs and food preferences for an active and healthy life

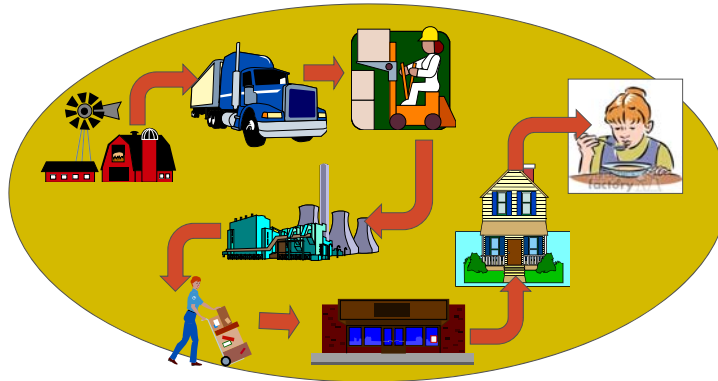
[FAO. 1996]

Food Safety ?

A condition and/or effort such that foods do not contain biological, chemical or physical hazards at level that can cause adverse effects on human's health

Food Safety ?

Managing food safety : From Farm to Table



Food Safety ?

Managing food safety : From Farm to Table

- Emerging Hazards?
- Emerging Risk?

→ associated with **new practices** (new farming practices, new ingredients, new processing technology, new trade practices, new “behaviour”, new science, new method, etc

Food Safety ? Emerging Risks?

- **Emerging Contaminants**
 - Acrylamide.
 - Monochloropropanediol (3-MCPD).
 - Food Contact Materials.
 - Allergen
 - Microbial Pathogen → will not be covered!
- **Emerging Issues from International Trade**
- **Emerging “regulation” : US- Food Safety Modernization Act**



ACRYLAMIDE

a

- 27.06.2002 WHO Expert Consultation
- „The consultation recognized the presence of acrylamide in foods as a major concern in humans based on the ability to induce cancer and heritable mutations in laboratory animals



ACRYLAMIDE

a

Summary of Acrylamide Values in Food (ppb)

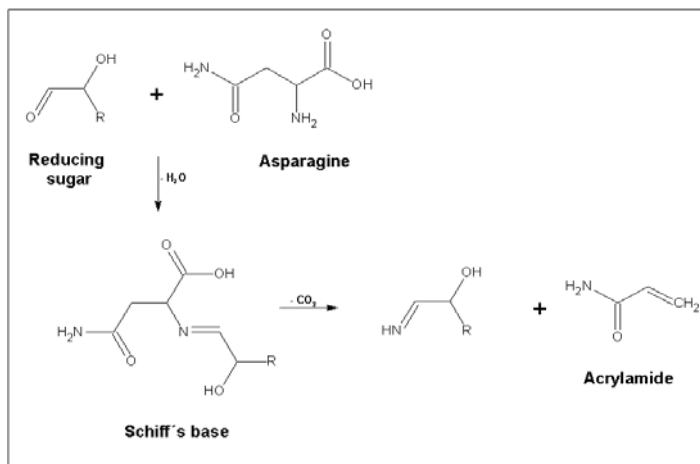
Category	European Data	FDA Data
Breads	12-3200	<10-364
Crispbread	<30-1670	-
Crackers and Biscuits	<30-2000	26-504
Cereal	<30-2300	52-266
Other Grains	<30	-
Potato Chips	150-1280	117-2762
Other Salty Snacks	122-416	12-1168
French Fries	85-1104	20-1325
Other Potato Products	<20-12400	-
Other Vegetable & Fruit Products	10-<50	<10-70
Prepared Foods	<30-30	-
Meats	<30-64	<10-116
Candy and Dessert items	<20-110	<10-909
Cookies	-	36-199
Coffee and Tea	170-700	175-351
Other Nonalcoholic Beverages	<30	-
Alcoholic Beverages	30	-
Dairy Products	10-100	<10-43
Baby Food and Formula	40-120	<10-130
Dry Soup Mixes	-	<10-1184
Gravy and Seasonings	-	38-54
Miscellaneous	70-200	<10-125

Petersen, B. Acrylamide: Formation, Exposure, Possible Reduction Strategies Materials and conclusions have been drawn from the October 2002 JIFSAN workshop, the FAO/WHO report on acrylamide, and presentations at the US FDA Food Advisory Committee meetings (Dec 2002, Feb 2003)

ACRYLAMIDE

a

- Tidak hanya “kentang goreng”
- Mekanisme :



ACRYLAMIDE

a

- Tidak hanya “kentang goreng”
- Faktor2 Kritis :

- Free asparagine
- Free reducing sugar (e.g. glucose, fructose)
- Low water activity
- Product temperature > 100°C



ACRYLAMIDE

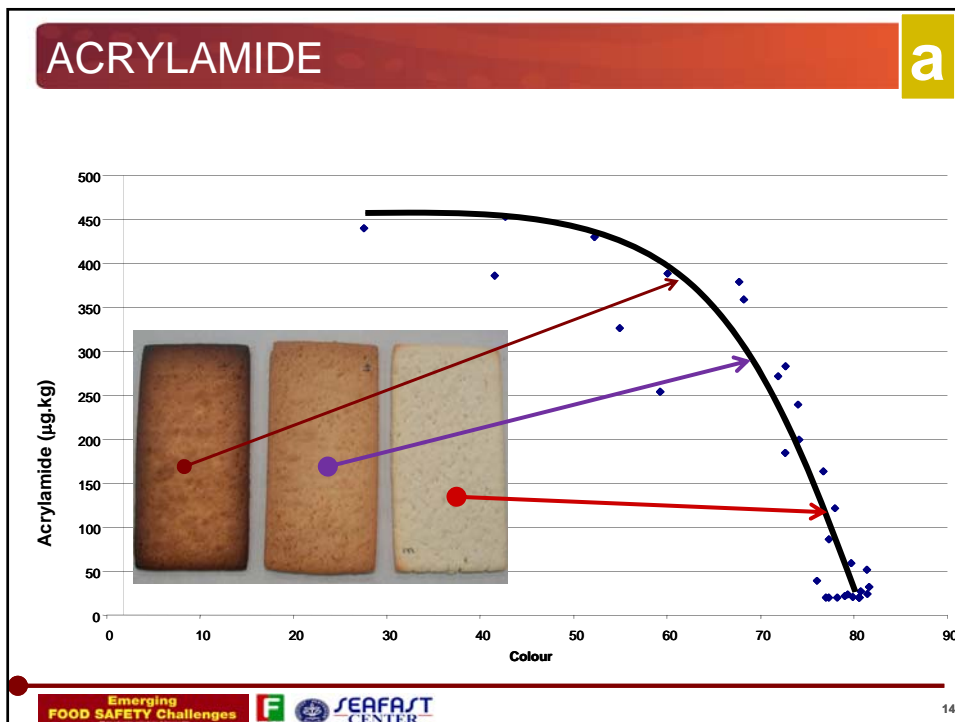
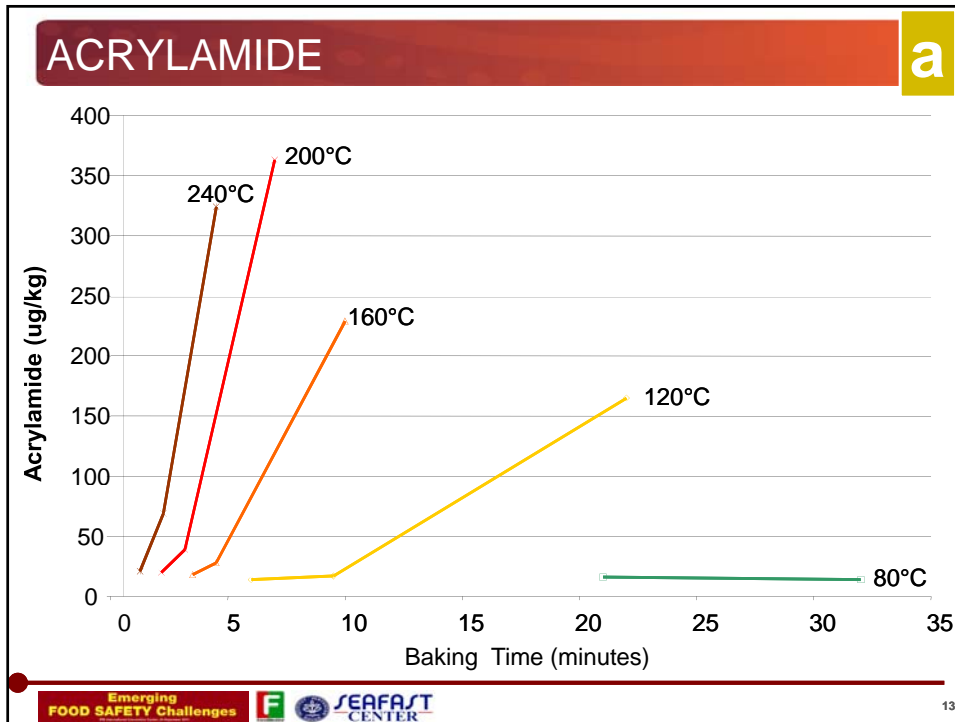
a

- Tidak hanya “kentang goreng”
- Produk bakery :

- Kandungan asparagin pada tepung sangat beragam
- Data dari 26 contoh tepung terigu France, Poland, UK, Belgium, Finland, Czech rep. and Italy (2002 Harvest) adalah sbb:

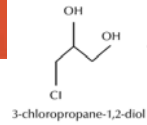
Asparagine	Median	Minimum	Maximum
Mg/100 g	7.9	3.0	21.9





3 MCPD

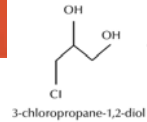
b



- 3 MCPD = 3-monochloropropane-1,2-diol .
→ formed in foods by the reaction of chloride with **lipids**
- 3-MCPD has been shown to be a carcinogen in laboratory animal studies
- European Commission's Scientific Committee on Food (SCF) : Tolerable Daily Intake (TDI) = 2µg/kg body weight/day
- In the EU, maximum levels of 0.02 mg/kg for free 3-MCPD in **hydrolysed vegetable proteins and soy** sauce were established in 2001.
- The maximum levels have been applied since April 2002 and are integrated into the Commission Regulation (EC) 1881/2006.

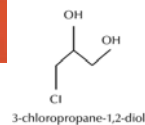
3 MCPD

b



- Faktor2 kritis :
 - Asam (*Chloride*); pH
 - Lipida
 - a_w
 - Suhu
 - ✓ Belum diketahui dgn pasti
 - ✓ Acid-HVP

3 MCPD

b

• Tidak hanya pada kecap & HVP

Anal Bioanal Chem (2010) 396:443–456
DOI 10.1007/s00216-009-3177-y

REVIEW

3-MCPD in food other than soy sauce or hydrolysed vegetable protein (HVP)

Ines Baer · Beatriz de la Calle · Philip Taylor

Received: 24 June 2009 / Revised: 17 September 2009 / Accepted: 21 September 2009 / Published online: 16 October 2009
© Springer-Verlag 2009

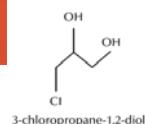
Abstract This review gives an overview of current knowledge about 3-monochloropropane-1,2-diol (3-MCPD) formation and detection. Although 3-MCPD is often mentioned with regard to soy sauce and acid-hydrolysed vegetable protein (HVP), and much research has been done in that area, the emphasis here is placed on other foods. This contaminant can be found in a great variety of foodstuffs and is difficult to avoid in our daily nutrition. Despite its low concentration in most foods, its carcinogenic properties are of general concern. Its formation is a multivariate problem influenced by factors such as heat, moisture and sugar/lipid content, depending on the type of

Introduction

3-Monochloropropane-1,2-diol (3-MCPD) is, together with 1,3-dichloro-2-propanol (1,3-DCP), the best-known component of a group of contaminants called chloropropanols (Fig. 1). 3-MCPD has probably existed in food since humans began to process food, but concerns have grown over the last few decades over the high levels of 3-MCPD in nontraditionally prepared soy sauce and its carcinogenic effects. The other two isomers, 2-MCPD and 2,3-DCP, are usually found at much lower concentrations, or not at all.

Emerging
FOOD SAFETY Challenge

3 MCPD

b

• Tidak hanya pada kecap & HVP

Czech J. Food Sci.

Vol. 27, 2009, Special Issue

3-Chloropropane-1,2-diol Fatty Acid Esters in Potato Products

Z. ZELINKOVÁ*, M. DOLEŽAL and J. VELÍŠEK

Department of Food Chemistry and Analysis, Institute of Chemical Technology Prague,
166 28 Prague, Czech Republic, *E-mail: zuzana.zelinkova@vscht.cz

Abstract: The occurrence of 3-chloropropane-1,2-diol fatty acid esters (bound 3-MCPD) in French fries and potato chips is reported. These products belong to the group of foodstuffs with high amount of 3-MCPD esters. Bound 3-MCPD was determined in all analysed samples in following concentrations: pre-frying French fries 27–64 µg/kg, French fries (final product) 100–258 µg/kg and potato chips 229–1008 µg/kg. Palm oil used for frying potato chips was analysed as well and the bound 3-MCPD levels ranged from 654 to 1920 µg/kg. 3-MCPD esters are formed in these products as a consequence of the processing technique. Especially frying oil represents the main source of these contaminants in frying potato products.

Keywords: 3-chloropropane-1,2-diol; 3-MCPD; bound 3-MCPD; potato products

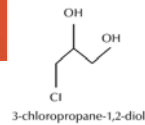
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3 MCPD

b



- Tidak hanya pada kecap & HVP

INFORM,
April 2009

Chloroesters in foods: An emerging issue

The detection, in some foods and vegetable oils, of fatty acid esters of the contaminant known as 3-MCPD is an emerging issue for food and vegetable oil processors.

Catherine Watkins

Process-based food contaminants have existed for many thousands of years, ever since prehistoric man first threw a haunch of woolly mammoth on a fire and produced polycyclic aromatic hydrocarbons. By comparison, it has been considerably less than 100 years since food safety agencies began conducting risk assessments of food contaminants. At this point, there are

Two basic pathways have been proposed: thermally driven and enzyme-catalyzed (generally lipase) reactions. Direct precursors are thought to be glycerol and chloride. Recent work has also suggested glycidol (2,3-epoxy-1-propanol) as a precursor. (Glycidol is highly reactive and has been found to be a multistage carcinogen in both sexes in animal models, as well as a genotoxin *in vitro* and *in vivo*.)

Fatty acid esters of 3-MCPD (see Scheme 1) were identified in the early 1980s in adulterated Spanish rapeseed oil treated with aniline and refined with hydrochloric acid. To date, however, the majority of the scientific investigations and regulatory actions involving chloropropanols have come as a result of the detection of high levels of free 3-MCPD in acid-hydrolyzed vegetable protein (acid-HVP) and nonfermented soy sauces made

Emerging
FOOD SAFETY Challenges

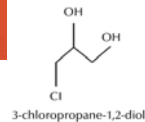


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3 MCPD

b



- Tidak hanya pada kecap & HVP

INFORM,
April 2009

Chloroesters in foods: An emerging issue

In November 2007, the German food safety agency (Bundesinstitut für Risikobewertung: BfR) called for levels of 3-MCPD esters to be reduced in oil-containing foods such as infant formula and margarine as well as in deep-frying fats, despite the absence of any indication of risk from bound 3-MCPD. In its assessment, BfR assumed that 100% of the bound

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FOOD SAFETY Challenges

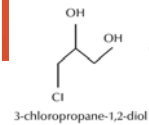


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20

3 MCPD

b



- Tidak hanya pada kecap & HVP



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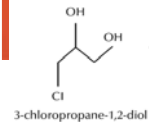


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3 MCPD

b



- Tidak hanya pada kecap & HVP

- 3-MCPD esters have been found in all refined vegetable oils.
- 3-MCPD esters are found in French fries, toasted bread, bread crust, donuts, salty crackers, roasted coffee, roasted chicory (coffee surrogate), roasted barley, roasted dark malt and coffee creamer, and in fermented foods like pickled herring and sausage.
 - Reported levels were between 0.2 and 6.6 mg/kg in most of the analysed foodstuffs and the levels of esterified 3-MCPD were much higher than the levels of free 3-MCPD.

Emerging
FOOD SAFETY Challenges

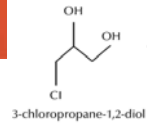


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3 MCPD

b



- Tidak hanya pada kecap & HVP

3-MCPD ESTERS IN FOOD PRODUCTS

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Recent studies have identified high levels of 3-MCPD esters in refined edible fats, such as margarine and oils, and in fat-containing foods including infant formula (both starter and follow-on) and human milk. Other related ester compounds such as 2-MCPD esters and glycidol esters are also expected to occur.

No toxicological data are available on 3-MCPD esters. The full hydrolysis of these esters in the gastrointestinal tract would result in significant exposures to free 3-MCPD. Considering the highest levels of 3-MCPD esters found in oils and fats, and assuming 100% hydrolysis, exposures of 10- to 20-fold the 3-MCPD tolerable daily intake (TDI) could be calculated for infants fed on formulae, and fivefold for adult men on a fat-rich diet.

Food Contact Materials

C

Food packaging – What is the purpose?

- Protection from the 'outside'
 - environment, to prevent the transfer of substances 'in' and 'out' of the packaged food.
 - *air (oxygen)*
 - *loss of gas (carbonated beverages)*
 - *moisture loss/ incorporation*
 - *light (and UV radiation)*
 - *foreign aroma compounds*
 - *microbial contamination*
 - *temperature instability*
 - *mechanical influences*
- Marketing, ETC

Food Contact Materials

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Food packaging – *BUT?*

It may interact with food inside:

→ **Food Contact Material products (FCM)**

- Plastic
- Glass
- Metals and alloys
- Ceramics
- Paper and board
- Rubber and elastomers
- Regenerated cellulose



Food Contact Materials

C

Food packaging – *PLASTIC?*

The Most Popular!



- Light-weight
- Various shapes (flexible – rigid)
- Colors
- High level of protection – hygiene
- They do not break compare to other materials (e.g. glass)
- Versatility (various applications)

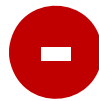


Food Contact Materials

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Food packaging – *PLASTIC?*

..... **BUT**



- Long life (environmental non-friendly)
- Cost of production
- **Migration of substances to foods**



Food Contact Materials

C

Food packaging – *PLASTIC?*

Plastic is a polymer?

“..organic macromolecular compounds obtained by polymerization, polycondensation, polyaddition or any other similar process from molecules with a lower molecular weight or by chemical alteration of natural macromolecules.”

Directive 2002/72/EC



Food Contact Materials

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Food packaging – PLASTIC?

Materials for... concern:

- Monomers/oligomers (e.g. ethylene, propylene, etc.)
- Additives used in the production of plastic FCMs:
 - Plasticizers (15-40% in PVC, i.e. Phthalates)
 - Anti-ageing(Antioxidants< 1%),
 - Surface properties modifiers (Anti-static, lubricants 1-4%),
 - Colorants
 - Foaming agents (e.g. carbon dioxide)
 - Improving substances (e.g. Flame retardants, fillers, biocides, mold release agents, reinforcements etc.)
- Adhesives
- Printing inks

Food Contact Materials

C

The screenshot shows a news article from the website 'Want China Times'. The article title is 'Plasticizer found in instant noodles sold in Hong Kong', which is circled in red. The article is dated 2011-06-12 and is by Chi Le-yi/Chen Da-ren and Staff Reporter. The main image shows a person in a supermarket aisle looking at shelves of instant noodle packages. The article text mentions that plasticizer was found in Chinese-made Japanese and Korean instant noodle brands in Hong Kong, and that products from Korean instant noodle brand Shin Yamyun available in Taiwan were imported from South Korea. The article also includes a section for 'Related' news, mentioning a CCTV reporter's report on a plasticizer in instant noodles and Taiwan's orders to recall them. The page also features a 'Most read' list and a 'Who's Who' section with a photo of Ma Ying-jeou.

Food Contact Materials

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Want ChinaTimes
Knowing China Through Taiwan
Monday, June 13, 2011
Taipei 26-35°C

NEWS Business Topics Photos In depth People Opinions Life Letters
Politics Economy Society Culture Environment Data

News Society

Chinese instant noodles also contain DEHP in packaging: study

Staff Reporter | 2011-05-03 | 10:58 (GMT+8)



Due to its plastic packaging, instant noodles sold supermarkets in China may contain DEHP as well. (Photo/CFP)

An article published in Food and Science magazine in China has confirmed that plastic instant noodle packaging contains plasticizer that may dissolve and contaminate the product. The article did not specify which brands may be affected however, according to the Yangcheng Evening News.

Liu Chunhong, the essay's author and associate professor of South

Article Tools
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Tags
instant noodles,
DEHP, China,
plasticizer,
contamination,

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06 Japanese Pom Star Sora Aki Phenomenon in Chinese Weibo
07 Does Tiger Mother's China Style Parenting Threaten Core US Values?
08 Chinese instant noodles also contain DEHP in packaging study
09 Hollywood goes east with rise of China's cinema market
10 Apple recalls iPads using Verizon 3G network

Who's Who
Miao Wei (苗圩)
Miao Wei is China's minister of Industry and Information Technology and an alternate member of the Central Committee of the 17th Communist Party of ...

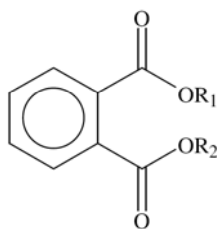
Emerging FOOD SAFETY Challenges F SEAFST CENTER

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Food Contact Materials. Case of Phthalate

C

Plasticizer : provide flexibility and softness to plastics → PVC --- (1)



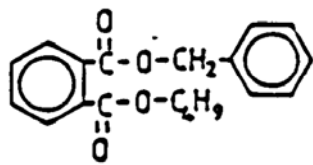
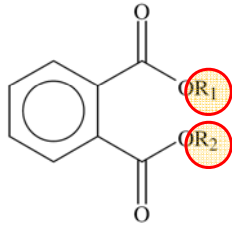
- Esters of phthalic acid
- primarily as plasticizers :
 - General applications (building and construction materials, medical devices, toys, cosmetics), and
 - Food applications :
 - Food contact materials (FCMs):
 - cap-sealing resins
 - sealing gaskets,
 - PVC films
 - PVC glove
 - Utensils, and
 - Packaging/film.

Food Contact Materials. Case of Phthalate

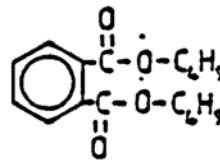
C

Plasticizer : provide flexibility and softness to plastics → PVC --- (2)

- Esters of phthalic acid



Butylbenzyl Phthalate
(BBP)



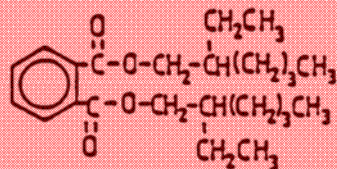
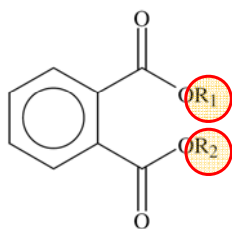
Dibutyl Phthalate
(DBP)

Food Contact Materials. Case of Phthalate

C

Plasticizer : provide flexibility and softness to plastics → PVC --- (3)

- Esters of phthalic acid



Di(2-ethylhexyl) Phthalate

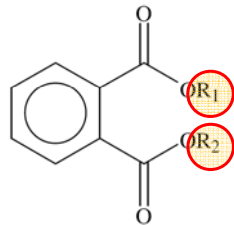
DEHP

- tidak larut dalam air,
- larut dalam lemak)
- tidak berwarna
- *almost no odor*

Food Contact Materials. Case of Pthalate

C

Plasticizer : provide flexibility and softness to plastics → PVC --- (4)



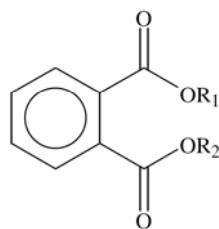
- Esters of phthalic acid

DEHP, DBP and BBP :
Subgroup of “Low MolecularWeight (LMW)” phthalates

Food Contact Materials. Case of Pthalate

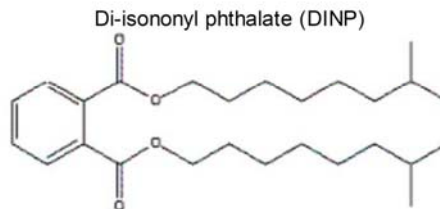
C

Plasticizer : provide flexibility and softness to plastics → PVC --- (5)



- Esters of phthalic acid

Subgroup of “High Molecular
Weight (HMW)” phthalates



Di-isononyl phthalate (DINP)

Molecular formula $C_{26}H_{42}O_4$

Food Contact Materials. Case of Pthalate

C

Plasticizer : provide flexibility and softness to plastics → PVC --- (6)

- Some foods, especially high fat foods, have a greater potential to extract additives from the FCMs
- Food may also be contaminated with phthalates through different kinds of environmental sources, or during processing.
- EFSA has established TDI¹⁾:
 - TDI for bis(2-Ethylhexyl) phthalate (DEHP)
→ 50 µg/kg body weight/day (EFSA 2005a).
 - TDI for diisononyl phthalate (DINP)
→ 0.15 mg/kg body weight/day (EFSA, 2005b), and
 - TDI for di-N-Butyl phthalate (DBP)
→ 0.1 mg/kg body weight/day (EFSA, 2005b).

¹⁾TDI = Tolerable Daily Intake; estimate of the amount of a contaminant or natural toxicant, expressed on a body weight basis that can be ingested daily over a lifetime without appreciable risk.



Food Contact Materials. Case of Pthalate

C

Plasticizer : provide flexibility and softness to plastics → PVC --- (7)

- The European Union (EU) has also set SML¹⁾
 - Di(2-ethylhexyl) phthalate, DEHP, SML=1.5 mg/Kg food
 - Diisononyl phthalate, DINP, SML=9 mg/Kg food
 - Butyl benzyl phthalate, BBP SML=30 mg/Kg food
 - Diisodecyl phthalate, DIDP SML=9 mg/Kg food

¹⁾ SML = Specific Migration Limit - means the maximum permitted amount of a given substance released from a material or article into food or food simulants, expressed in milligrams per kilogram of the food (mg/kg).



Food Contact Materials. Case of Pthalate

C

Faktor yang berpengaruh pada migrasi



Alergen

d

• Alergen

Major allergens in foods

- Milk
- Eggs
- Fish (e.g. bass, flounder, cod)
- Shellfish (e.g. crab, lobster, shrimp)
- Tree nuts (e.g. almonds, walnuts, pecans)
- Peanuts
- Wheat
- Soybeans

Alergen

d

• Alergen

Major Concern

US (USFDA):

- ~ 2 - 2.5 % : true food allergies
- 150-200 mati per tahun
- No Cure
- Avoidance is the only way to prevent an allergic reaction
- Labeling

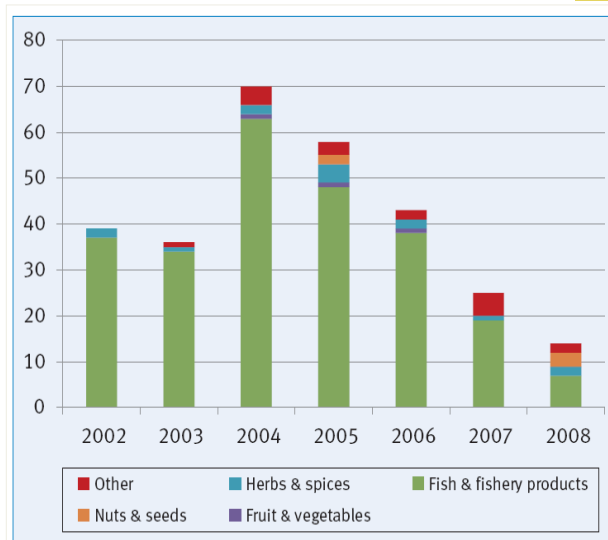


Emerging Issues from International Trade

e

The Trade Standards Compliance Report, 2010 (UNIDO)

Number of EU rejections of food and feed exports from Indonesia, 2002-2008

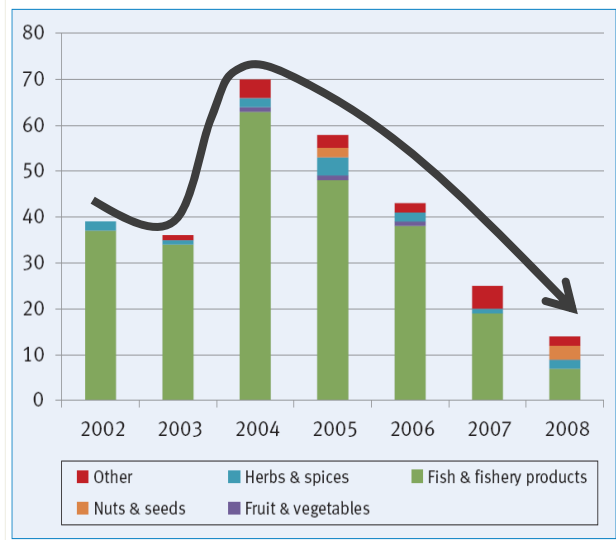


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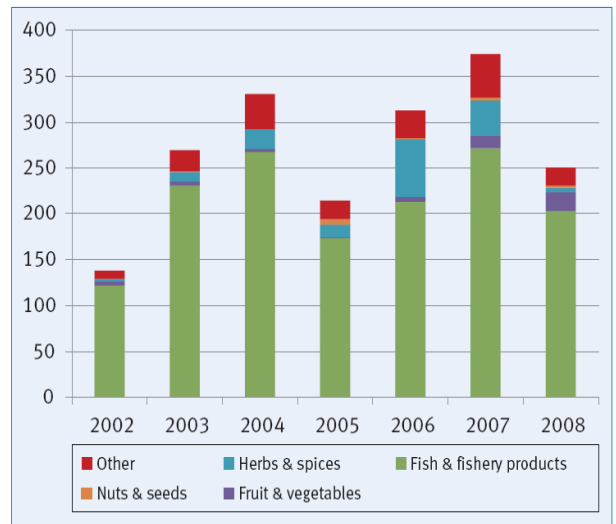


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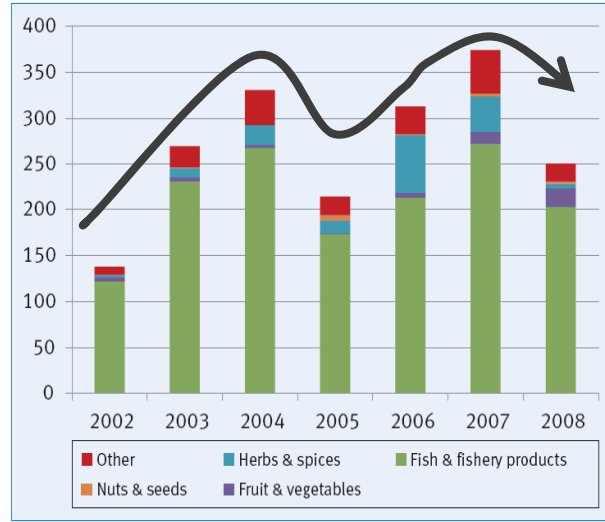


Emerging Issues from International Trade

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The Trade Standards Compliance Report, 2010 (UNIDO)

Number of EU rejections of food and feed exports from Indonesia, 2002-2008



Reasons for EU rejections of food products, 2002-08 (The Trade Standards Compliance Report, 2010; UNIDO)

Country	Mycotoxins	Microbiological contaminants	Veterinary drug residues	Heavy metals	Unauthorized food additives	Product composition	Pesticide residues	Migration	Industrial contaminants	GMO/novel food	Foreign bodies	Biotoxins/contaminants	Radiation	Organoleptic	Bad or insufficient controls	Parasitic infestation	Labelling	Packaging	Other chemical contamination	Allergens	Feed additives	Not determined/other	Total
Iran	2,041	1	0	3	9	0	15	0	1	0	4	0	0	0	0	0	2	0	0	0	0	3	2,079
China	503	89	286	300	139	77	25	229	86	41	45	8	31	26	14	12	20	14	12	3	0	109	2,069
Turkey	983	95	15	30	177	114	153	19	8	0	47	2	2	8	0	2	11	0	2	4	0	20	1,692
India	193	148	179	77	48	139	65	9	5	7	7	3	7	18	1	0	3	0	1	2	0	16	928
United States	340	32	8	18	48	36	5	0	15	206	13	0	43	7	8	4	13	1	7	3	3	26	836
Thailand	20	233	191	47	78	12	111	13	21	0	7	13	18	3	4	0	0	4	2	1	0	25	803
Brazil	178	234	78	29	70	4	12	2	1	1	5	3	3	11	16	6	4	19	3	1	13	22	715
Vietnam	20	147	186	46	26	28	8	1	30	1	3	13	5	5	7	2	0	1	0	1	0	16	546
Argentina	174	78	27	7	15	1	14	1	1	1	2	1	0	12	8	5	0	0	0	0	2	6	355
Indonesia	14	36	72	88	4	37	1	1	0	1	1	44	3	4	1	6	0	0	1	1	0	3	318
Ghana	91	13	0	5	11	101	0	0	8	0	5	0	0	6	6	0	4	4	0	0	0	8	262

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Country	Labelling	Unregistered process/manufacturer	Filthy/unsanitary	Unauthorized food additives	Microbiological contaminants	Pesticide residues	Veterinary drug residues	Poisonous	Biotxins/contaminant no import permit	HACCP	Mycotoxins	Product composition	Foreign bodies	Other chemical contamination	Packaging	Allergens	Adulteration	Quality standards	Inadequate information	Radiation	Total	
Mexico	3,328	475	3,476	1,475	1,328	2,109	16	135	5	27	114	91	14	17	10	14	7	1	8	0	0	12,650
India	3,829	1,246	1,722	1,346	1,532	454	16	48	2	28	0	37	15	38	10	4	4	1	1	0	0	10,333
United Kingdom	5,899	1,228	65	833	40	1	0	5	7	5	13	0	16	2	0	0	0	9	0	1	0	8,124
China	1,266	1,236	1,625	931	290	402	582	45	5	12	7	7	9	11	35	9	1	0	1	3	0	6,477
Canada	2,516	356	548	524	124	254	16	26	0	16	27	33	6	5	0	0	0	3	0	5	0	4,459
Japan	1,124	1,726	279	272	76	4	0	12	4	5	58	0	1	1	2	1	1	0	0	0	0	3,566
Vietnam	798	376	866	285	770	16	172	106	99	2	29	22	0	1	8	0	1	0	1	0	0	3,552
Dominican Republic	117	32	170	8	2	2456	0	4	5	15	0	0	1	0	0	2	0	0	0	0	0	2,812
Italy	1037	1268	215	68	63	10	0	11	0	4	6	1	5	1	0	0	0	0	1	0	0	2,690
South Korea	875	1068	181	299	129	13	0	8	0	7	49	0	2	1	1	0	2	0	0	0	0	2,635
Indonesia	335	347	949	82	600	0	120	56	95	6	2	3	13	0	0	1	0	0	0	0	0	2,609

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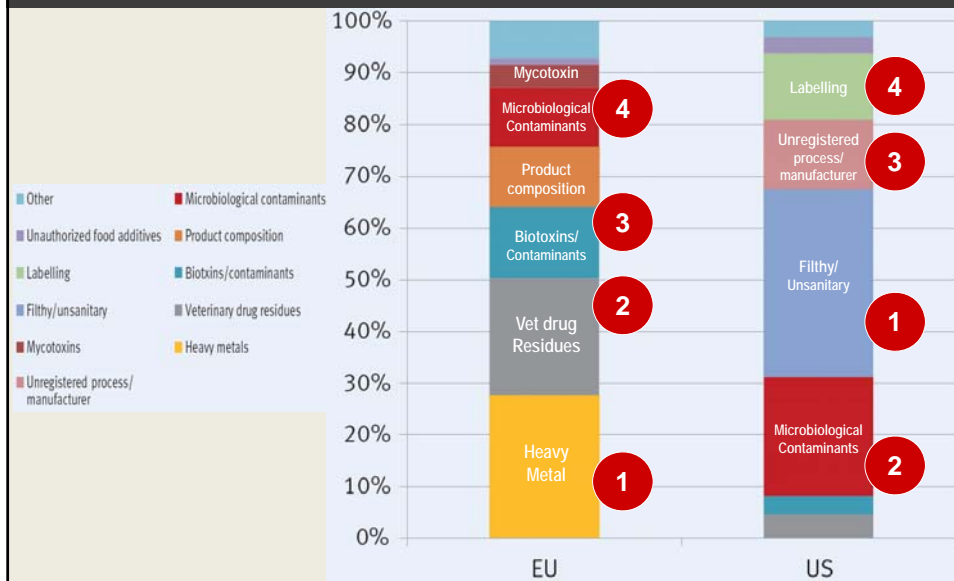
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Comparison of Reasons for US & EU rejections of food products, 2002-08 (The Trade Standards Compliance Report, 2010; UNIDO)



New Regulations?

U.S. Department of Health & Human Services | www.hhs.gov

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Food

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Food Safety

- Food Safety Modernization Act (FSMA)
 - About FSMA
 - Full Text of the Law
 - Implementation and Progress
 - Dockets Open for Comment
 - Meetings, Hearings, and Workshops
 - Press Releases
 - Speeches, Statements, and Articles
 - Presentations and Print Material
 - Videos, Webinars, and Interviews
 - Frequently Asked Questions
 - Translations of Key FSMA

The New FDA Food Safety Modernization Act (FSMA)

The FDA Food Safety Modernization Act (FSMA) was signed into law by President Obama on January 4th, 2011. It aims to ensure the U.S. food supply is safe by shifting the focus of federal regulators from responding to contamination to preventing it.

Get FSMA Updates by E-mail

The Food Safety Law and the Rulemaking Process: Putting FSMA to Work

FDA will be issuing a number of rules to implement FSMA. This new publication describes the rulemaking process and how you can participate. [More >](#)

<http://www.fda.gov/food/foodsafety/fsma/default.htm>

Emerging FOOD SAFETY Challenges | SEAFASST CENTER

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New Regulations? US-FDA-FSMA

Why is the law needed?

- Globalization
 - 15 percent of U.S. food supply is imported
- Food supply more high-tech and complex
 - More foods in the marketplace
 - New hazards in foods not previously seen
- Shifting demographics
 - Growing population (about 30%) of individuals are especially "at risk" for foodborne illness

FDA U.S. Food and Drug Administration
Protecting and Promoting Public Health
www.fda.gov/fsma

FDA FOOD SAFETY MODERNIZATION ACT

Emerging FOOD SAFETY Challenges | SEAFASST CENTER

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Purwiyatno Hariyadi
hariyadi@seafast.org



Prevention: The cornerstone

- Comprehensive preventive controls for food and feed facilities
 - Prevention is not new, but Congress has given FDA explicit authority to use the tool more broadly
 - Strengthens accountability for prevention
- Produce safety standards
- Intentional adulteration standards
- Transportation



General Approach to Preventive Controls





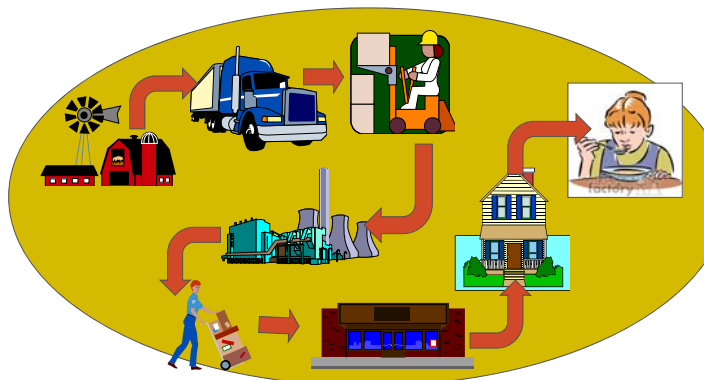
Prevention Standards Mandates

Sec. 103. Hazard analysis and risk-based preventive controls

- Requires food and feed facilities to evaluate hazards that could affect food safety; identify and implement preventive controls to prevent hazards; monitor controls and maintain monitoring records; and conduct verification activities.



Managing Intentional contamination/ Adulteration: *From Farm to Table*



- Fokus pada rantai produksi pangan



“Pertanian”
atau
pemasok
bahan baku

Potensi “*Intentional Contaminations*”:

- Pestisida?
- Air irigasi?
- Air pengolahan (untuk pendinginan/pencucian produk/buah/sayuran)?
- Tempat penyimpanan sementara?
- Pupuk?
- Pekerja??
- dll

- Fokus pada rantai produksi pangan

Potensi “*intentional contamination*”

- Bahan baku dan ingridien
- Bahan pengemas
- Sabotase?
- Pemalsuan (adulterated ingredients)
- *Errors in process (GMP and HACCP) vs true bio-terrorism*
- *Disgruntled employees*



Pengo-
lahan

New Regulations? Managing Intentional Contamination



- Fokus pada rantai produksi pangan

Melamine?

Adulteration
Apr 03 2009

China Resolves Corporate Greed by Executions

Posted by political in Economy, Food and Drug Administration, Political Hypocrisy, tags: China execution for dairy producers, China tainted products, Chinese Dairy producers appeal verdict, chinese products tainted, Chinese Tainted Milk Scandal, Defendants appeal execution, FDA failure, melamine chinese products list, tainted baby formula-melamine, toxic melamine in foods, toxic pet foods

In the Hubei Province of China drama ensued after a court had reached a verdict in the Tainted Melamine baby milk scandal that has tainted China's reputation as a manufacturing country even further than the dog food scandal.

Chinese babies all 300,000 sick or the dead. had to suffer the consequences of chinese dairy producers greed that drank baby milk tainted with melamine poison.

The baby formula milk

Infected Monkey Genes
○ What's In a Flu Shot
○ Jerry Ryburg-the New World Order
○ US Making Biological Viruses-forcing Vaccinations
○ The Swine Flu Fiasco-Dor Be a Guinea Pig

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- Food and Drug Administration.
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- Green Energy
- Health Care Reform Bill

New Regulations? US-FDA-FSMA



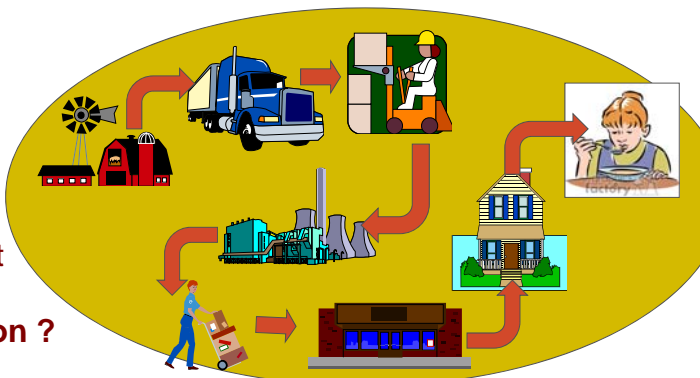
Managing Intentional contamination/ Adulteration: *From Farm to Table*

Melamine?

How

- To detect
- To Deter
- To Prevent

Intentional Contamination ?



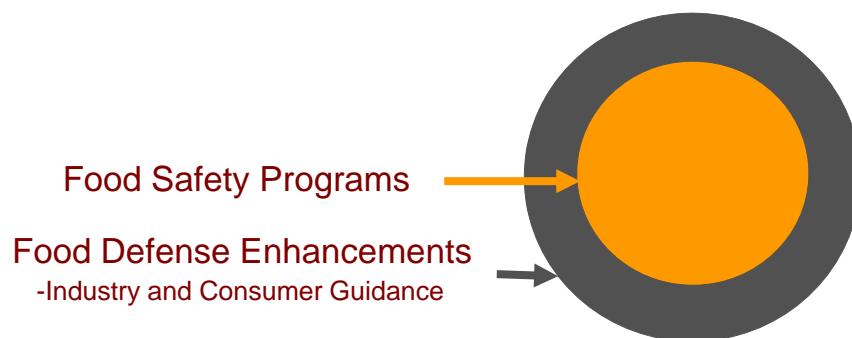
Implication for Indonesian Food Industries?

- Indonesia Food industry need to be aware to the new development in food safety issues and regulation
- More collaboration: **Government-Industry-Academia**
 - i. Update good practices : Updated guideline/regulations
 - ii. Better support of laboratory analysis
- **Industry** : Strengthen food safety measures → FSM
 - Focus on prevention
 - Include **Food Defense Management System**

Implication for Indonesian Food Industries?

Perlu ada paradigma baru :

- Paradigma “*Food Defense*”



Implication for Indonesian Food Industries?

Perlu ada paradigma baru :

- Paradigma “*Food Defense*”

In today's world it is important to be ALERT to protect your business.

- A** How do you **ASSURE** that the supplies and ingredients you use are from safe and secure sources?
- L** How do you **LOOK** after the security of the products and ingredients in your facility?
- E** What do you know about your **EMPLOYEES** and people coming in and out of your facility?
- R** Could you provide **REPORTS** about the security of your products while under your control?
- T** What do you do and who do you notify if you have a **THREAT** or issue at your facility, including suspicious behavior?

Terimakasih