



## **Final Report**

### **Study of Mercury Contamination in Face Whitening Products in Thailand**

**By Ecological Alert and Recovery – Thailand (EARTH)**

#### Rationale

In 2002, governments worldwide recognized the importance of sound management of chemicals throughout the chemical life-cycle. Together, they agreed on a common goal to reduce the impact of chemicals that may be harmful to human health and the environment, known as the Strategic Approach to International Organization on Chemicals Management (SAICM), at the World Summit on Sustainable Development at Johannesburg, South Africa. Among ongoing activities under SAICM are developments toward the Mercury Treaty, due to the extremely harmful and long-term health impact of mercury, a toxic substance that does not degrade in the natural environment.

Mercury is either a limited or prohibited ingredient according to international standards. The United States' Food and Drug Administration permits no more than 1 part per million (ppm) of mercury content. In the European Union, mercury is a prohibited ingredient in cosmetics. The Association of Southeast Asian Nations (ASEAN) Cosmetic Directive allows only cosmetics with zero mercury content to be sold in ASEAN markets. In Thailand, the Food and Drug Administration (Thai FDA) has legislated that mercury and mercury compounds are prohibited cosmetic ingredients since 1989, and again in 2008 released the Ministry of Public Health Notice on Prohibited Cosmetic Ingredients, of which mercury and mercury compounds are prohibited ingredient number 221.

Mercury contamination in face whitening cream is a dangerous issue of increasing importance, considering the widespread and growing popularity of face whitening products. In Thailand, face whitening cream holds a 60 per cent share of the national market for facial lotion, with an approximate value of 2,100 million baht (70 million USD), according to a market study released in July 2004 by Beiersdorf (Thailand). It is, therefore, critical to increase public awareness about mercury contamination in products, particularly in the case of face whitening cream.

#### Objectives

1. To examine the level of mercury contamination in face whitening products on the Thai market
2. To increase awareness among consumers about the danger of mercury and the importance of eliminating mercury from products

## Methodology

1. Review of existing literature and the market of face whitening cream in Thailand
2. Sample face whitening cream products sold on the market, in collaboration with the Foundation for Consumers (FFC) in southern, northern, northeastern and central Thailand, with the following selection criteria for samples:
  - 2.1. Facial skin lotion that advertises ability to whiten, lighten, or erase blemishes
  - 2.2. Sold in Bangkok, metropolitan areas, major provinces across Thailand, and online
  - 2.3. Commonly available at department stores, shops and street stalls
3. Conduct initial testing of ammoniated mercury content using the Test Kit for Whitening Lotion, developed by Department of Medical Sciences, Ministry of Health
4. Send product samples, with labels removed, to analyze quantity of mercury contamination using cold vapor atomic absorption (CVAAS) according to ASEAN standards, at Intertek Testing Services (Thailand)
5. Publish study results in Smart Buyer Magazine, a national monthly publication by the Foundation for Consumers with a readership of approximately 10,000
6. Release study results at press conference on August 16, 2012, with attendance from various media: national free TV stations, cable TV stations, national newspapers, health and consumer magazines, online news agencies, etc.
7. Submit formal letter jointly signed by EARTH and the Foundation for Consumers, as well as detailed results of the study, to the Thai FDA.
8. Organize consumer campaign for mercury-free face whitening products, through press coverage and online social networks

## Duration

Samples were collected in April and May 2012. Laboratory analysis was completed in May 2012.

Results were released in July and August, 2012.

## Results

Of all 47 samples surveyed in 8 provinces, we found:

**1. In the sample survey, 1 in 5 of all face whitening products are contaminated with mercury**

According to laboratory analysis by Intertek Testing Services (Thailand), there is mercury contamination in 10 samples or 21 percent (approximately 1 in 5) of all face whitening creams sampled. The level of contamination ranged from 63.53 ppm to 99,070 ppm.

The remaining 37 samples, or 79 percent, cannot be determined whether they contain less than 0.05 ppm or no mercury, due to technical limitations of the laboratory analysis. Details in Table 1.

**Table 1 Analysis of Mercury Content in Face Whitening Cream**

Code	Product Name	Mercury Content (ppm)	Price (baht)	Size	Purchase Location
W41	FC Rice Milk	99,070	40	5 g.	Surat Thani
W37	White Rose	51,600	189	6 g.	Songkhla
W44	Biocollagen	47,960	170	6 g.	Kalasin
W42	Meiyong	41,770	57	5 g.	Songkhla
W39	Best Beauty	34,430	80	5 g.	Samut Prakarn
W40	Pearl Bouncing Face	13,800	20	5 g.	Songkhla
W27	Nature	7,300	300	10 g.	Nonthaburi
W47	Madame	3,435	150	5 g.	Nonthaburi
W32	Babyface	81.14	40	5 g.	Internet
W35	Mahaad Moisturizing Cream	63.53	390	15 g.	Surat Thani
W01	Garnier	<0.05*	179	50 ml	Bangkok
W02	Nivea Day Cream	<0.05*	245	50 ml	Bangkok
W03	Nivea Night Cream	<0.05*	245	50 ml	Bangkok
W04	Ponds	<0.05*	229	50 g	Bangkok
W05	L'Oréal	<0.05*	249	50 ml	Bangkok
W06	Olay	<0.05*	189	50 g	Bangkok
W07	White Code	<0.05*	225	50 g	Bangkok
W08	Ceramine	<0.05*	125	40 g	Bangkok
W09	Scacare	<0.05*	145	30 g	Bangkok
W10	Nivea	<0.05*	125	100 g.	Bangkok
W11	Bhaesaj	<0.05*	29	70 ml	Bangkok
W12	Beta Day Cream	<0.05*	25	5 g.	Bangkok

\* Products either with no mercury content or less than 0.05 ppm of mercury.

Due to current technological limitations, it is unable to detect mercury if the product contains less than 0.05 ppm.

Code	Product Name	Mercury Content (ppm)	Price (baht)	Size	Purchase Location
W13	Beta Night Cream	<0.05*	25	2.5g.	Bangkok
W14	Casanovy	<0.05*	250	20 ml.	Nonthaburi
W15	Neutrogena	<0.05*	549	50 g.	Nonthaburi
W16	Just Pearl	<0.05*	275	10 g.	Nonthaburi
W17	Smooth E	<0.05*	265	1 fl. oz.	Nonthaburi
W18	Nivea for Men	<0.05*	192.75	40 ml.	Nonthaburi
W19	Vaseline	<0.05*	199	40 g.	Nonthaburi
W20	Garnier for Men	<0.05*	179	40 ml.	Nonthaburi
W21	Boots Luminese	<0.05*	189	45 ml.	Nonthaburi
W22	Boots	<0.05*	350	50 ml.	Nonthaburi
W23	KA	<0.05*	135	45 g.	Nonthaburi
W24	Mistine	<0.05*	69	30 g.	Nonthaburi
W25	Giffarine	<0.05*	156	40 g.	Nonthaburi
W26	Baan Chom Nok	<0.05*	39	20 g.	Nonthaburi
W28	Dr. Montri	<0.05*	39	20 g.	Nonthaburi
W29	Dior Snow	<0.05*	100	60 ml.	Nonthaburi
W30	Yura	<0.05*	320	30 g.	Nonthaburi
W31	Skin Food	<0.05*	100	50 g.	Nonthaburi
W33	Kuan Im	<0.05*	15	3 g.	Bangkok
W34	Supaporn	<0.05*	65	15 g.	Bangkok
W36	Waan Thai	<0.05*	190	20 g.	Payao
W38	Dermist	<0.05*	325	30 g.	Payao
W43	Suntree	<0.05*	139	20 g.	Payao
W45	Biowhitening	<0.05*	170	6 g.	Kalasin
W46	Bio SPF 50	<0.05*	170	6 g.	Kalasin

## 2. All contaminated products contain incomplete labeling

Upon analysis of all 10 samples contaminated with mercury, we found that contaminated products contain incomplete labeling. Many products lack information such as the manufacturer, the manufacturing date and expiration date. All contaminated products lack the “notification number,” which means the products

\* Products either with no mercury content or less than 0.05 ppm of mercury.

Due to current technological limitations, it is unable to detect mercury if the product contains less than 0.05 ppm.

do not exist in the Thai-FDA database, making it nearly impossible to identify the manufacturer's information should consumers have problems with the product. Details in Table 2.

**Table 2 Labeling information on products contaminated with mercury**

Code	Product Name	Product Description	Mercury Content (ppm)	Notification Number	Manufacturing Date	Manufacturer	Size
W41	FC Rice Milk	Whitening Complex; Facial Night Complex	99,070	None	None	None	5 g.
W37	White Rose	Sheep Placenta Cream	51,600	None	10-01-12	Tanapatra Cosmetics	6 g.
W44	Biocollagen	Biocollagen Clean	47,960	None	None	Bio Inter Co. Ltd.	6 g.
W42	Meiyong	Seaweed Herbal Cream	41,770	None	None	None; sold by 150/49, Moo 3, Ton Ma Muang, Muang, Petchburi	5 g.
W39	Best Beauty	Herbal Skin Care, Pimple-Free, White Face	34,430	None	None	None	5 g.
W40	Pearl Bouncing Face	Bouncing Face Cream	13,800	None	None	C&R Cosmetics Co. Ltd.	5 g.
W27	Nature	Super Whitening Cream	7300	None	15-04-12	None	10 g.
W47	Madame	Organic KAIMOOK (Pearl)	3,435	None	19-02-12 Lot. 013	Madame Organic (Thailand) Co. Ltd.	5 g.
W32	Babyface	Whitening Cream	81.14	None	None	None	5 g.
W35	Mahaad Moisturizing Cream	Grape Extract Cream, Clear Face	63.53	None	None	None	15 g.

### 3. There is no correlation between selling price and level of mercury contamination

Upon analysis of selling price of mercury-contaminated face whitening cream, there is no correlation between selling price and level of mercury contamination. Some face whitening creams are sold at a high price but are contaminated with mercury. The three most expensive creams (price per gram) in this sample study are all contaminated with mercury, between 3,435 to 47,960 ppm. Meanwhile, some face whitening creams are sold at a low price but contain less than 0.05ppm or no mercury. Details in Table 3.

**Table 3 Level of mercury contamination and selling price of face whitening cream**

Code	Produce Name	Mercury Content (ppm)	Price per gram (baht)	Selling Price (baht)	Size
W47	มาดาม (MADAME)	3,435	30.0	150	5 g.
W27	เนเจอร์ (NATURE)	7300	30.0	300	10 g.
W44	ไบโอคอลลาเจน (BIO Collagen)	47,960	28.3	170	6 g.
W45	ไบโอไวท์เทนนิ่ง (BIO Whitening)	<0.05*	28.3	170	6 g.
W46	ไบโอ เอสพีเอฟ 50 (BIO SPF 50)	<0.05*	28.3	170	6 g.
W16	จัสท์เพิร์ล (Just Pearl)	<0.05*	27.5	275	10 g.
W35	ครีมบำรุงมหาด (Mahad)	63.53	26.0	390	15 g.
W39	เบสท์ บิวตี้ (Best Beauty)	34,430	16.0	80	5 g.
W14	คาซาโนวี (CASANOVI)	<0.05*	12.5	250	20 ml.
W42	เหมยหยง (Meiyong )	41,770	11.4	57	5 g.
W15	นิวโทรเจิน่า (Neutrogena)	<0.05*	11.0	549	50 g.
W30	ยูร่า (YURA)	<0.05*	10.7	320	30 g.
W13	เบต้า สตรกลางคืน (BETA)	<0.05*	10.0	25	2.5g.
W17	สมูท อี (Smooth E)	<0.05*	9.3	265	1.0 fl.oz.
W38	เดอร์มิสท์ (DERMIST)	<0.05*	9.2	275	30 g.
W37	ไวท์โรส (White Rose)	51,600	9.0	54	6 g.
W36	ว่านไทย (Wanthai)	<0.05*	8.6	172	20 g.
W32	เบบี้เฟซ (Baby Face)	81.14	8.0	40	5 g.

\* Products either with no mercury content or less than 0.05 ppm of mercury.

Due to current technological limitations, it is unable to detect mercury if the product contains less than 0.05 ppm.

Code	Produce Name	Mercury Content (ppm)	Price per gram (baht)	Selling Price (baht)	Size
W41	FC น้ำนมข้าว (FC Nam Nom Khao)	99,070	8.0	40	5 g.
W22	บูทส์ (Boots)	<0.05*	7.0	350	50 ml.
W43	ซันทรี (SUN Tree)	<0.05*	7.0	139	20 g.
W33	กวนอิม (KUAN-IM)	<0.05*	5.0	15	3 g.
W12	เบต้า สูตรกลางวัน (BETA)	<0.05*	5.0	25	5 g.
W05	ลอรีอัล (L'Oreal)	<0.05*	5.0	249	50 ml
W19	วาสลีน (Vaseline)	<0.05*	5.0	199	40 g.
W09	สกาแคร์ (Scacare)	<0.05*	4.8	145	30 g
W18	นีเวีย สำหรับผู้ชาย (NIVEA for MEN)	<0.05*	4.8	192.75	40 ml.
W04	พอนด์ส (POND'S)	<0.05*	4.6	229	50 g
W07	ไวท์โคด (White Code)	<0.05*	4.5	225	50 g
W20	การ์นิเย สำหรับผู้ชาย (GARNIER)	<0.05*	4.5	179	40 ml.
W34	สุภาภรณ์ (Supaporn)	<0.05*	4.3	65	15 g.
W21	บูทส์ ลูมิเนส (Luminese)	<0.05*	4.2	189	45 ml.
W40	เพิร์ล ครีม (PEARL Cream)	13,800	4.0	20	5 g.
W25	กิฟฟารีน (Giffarine)	<0.05*	3.9	156	40 g.
W06	โอเลย์ (Olay)	<0.05*	3.8	189	50 g
W01	การ์นิเย (Garier)	<0.05*	3.6	179	50 ml
W08	เซรามีน (Ceramine)	<0.05*	3.1	125	40 g
W23	เคเอ (KA)	<0.05*	3.0	135	45 g.
W02	นีเวีย สูตรกลางวัน (NIVEA)	<0.05*	2.5	122.5	50 ml
W03	นีเวีย สูตรกลางคืน(NIVEA)	<0.05*	2.5	122.5	50 ml
W24	มิสทีน (Mlstine)	<0.05*	2.3	69	30 g.
W31	สกินฟู้ด (Skin Food)	<0.05*	2.0	100	50 g.
W26	บ้านหมนก (BANCHOMNOK)	<0.05*	2.0	39	20 g.
W28	ดอกเตอร์มอนตรี (Dr. Montri)	<0.05*	2.0	39	20 g.

\* Products either with no mercury content or less than 0.05 ppm of mercury.

Due to current technological limitations, it is unable to detect mercury if the product contains less than 0.05 ppm.

Code	Produce Name	Mercury Content (ppm)	Price per gram (baht)	Selling Price (baht)	Size
W29	ดีออร์ สโนว์ (Dior Snow)	<0.05*	1.7	100	60 ml.
W10	นีเวีย (NIVEA)	<0.05*	1.3	125	100 g.
W11	เกสัช (BHAESAJ)	<0.05*	0.4	29	70 ml

#### 4. Some mercury-contaminated face whitening creams are in the Thai FDA's list of dangerous products, but are still widely available on the Thai market

Analysis of the Thai FDA's lists of dangerous products, we found that 7 of 10 contaminated creams in this sample survey are in the Thai FDA's list of "dangerous products, banned from use" but are still widely available on the market across Thailand. The remaining 3 in 10 contaminated products are not found to be on the Thai FDA's list, but have high levels of mercury contamination, between 63.53 to 47,960 ppm. The Thai FDA safety standard for cosmetics is 0ppm mercury. Details in Table 4.

**Table 4 Mercury-contaminated products on Thai FDA's list of dangerous cosmetics are still widely available**

Code	Product Name	Mercury Content (ppm)	Thai FDA declared as "dangerous product, banned from use"	Location of Purchase (Apr-May 2012)
W41	FC Rice Milk	99,070	September 2011	Surat Thani
W37	White Rose	51,600	March 2009	Songkhla
W44	Biocollagen	47,960	-	Kalasin
W42	Meiyong	41,770	September 2010	Songkhla
W39	Best Beauty	34,430	September 2011	Samut Prakarn
W40	Pearl Bouncing Face	13,800	October 2008	Songkhla
W27	Nature	7,300	-	Nonthaburi
W47	Madame	3,435	March 2009	Nonthaburi
W32	Babyface	81.14	October 2008	Internet
W35	Mahaad Moisturizing Cream	63.53	-	Surat Thani

\* Products either with no mercury content or less than 0.05 ppm of mercury.

Due to current technological limitations, it is unable to detect mercury if the product contains less than 0.05 ppm.



**5. Face whitening creams in Thailand have a higher maximum level of mercury contamination than other Asian countries.**

This study found Thai cosmetics have a higher maximum level of mercury contamination than other Asian countries, namely Bangladesh and the Philippines where similar studies have been conducted in May and June 2012, respectively. According to this sample survey, the highest level of mercury contamination in Thai face whitening creams is 99,070 ppm, while the highest level of mercury contamination is 4,643 ppm in Bangladesh and 60,800 ppm in the Philippines. Details in Table 5 and Table 6.

**Table 5 Level of Mercury Contamination in Face Whitening Creams, Bangladesh**

Code	Product Name	Mercury Content (ppm )
1	Shumons Aroma	3,361
2	PONDS	3,450
3	Fair & Handsome	3,567
4	Olay	3,604
5	Tibbat	3,753
6	Botanic	3,930
7	Modern	3,931
8	Fair & Lovely Ayurvedic	4,005
9	Fair & Handsome: Emami	4,134
10	Modern	4,152
11	Fair & Lovely Max fairness	4,174
12	Garnier	4,643

Source: Environment and Social Development Organization (EDSO), May 2012

**Table 6 Level of Mercury Contamination in Face Whitening Creams, the Philippines**

Code	Product Name	Mercury Content (ppm )
1	AILKE Perfection Salvation Rosy Whitening and Peeling Cream	Not detected
2	Aichun Beauty Strongly Whitening Freckle Series (3 in one)	550
3	Aichun Beauty Pawpaw Whitening and Freckle Remover Series	867
4	Aichun Beauty Green Tea Whitening Speckle Removing Series	1,250
5	Loreal Paris Anti-Freckle Cream Suit	1,371
6	"Special Cream" (Single, Label in Chinese)	1,378
7	"Special Cream" (Double, Label in Chinese)	1,565
8	Green Cucumber and Ginseng 6 Day Specific Eliminating Freckle Whitening Set	9,414

9	Feique Green Tea Vital Whitening Freckle-Removing Cream	15,800
10	Feique Whitening Anti-Freckle Cream	16,000
11	Feique Golden Aloe Whitening Anti-Scar, Anti Freckle Set	25,000
12	Yudantang Ginseng and Ganoderma Lucidum 6 Day Specific Eliminating Freckle Whitening Sun Block Cream	31,300
13	Bai Li Tou Hong	46,700
14	Maidaifu Herbal Moisturizing and Whitening Cream	60,800

Source: Ecowaste Coalition, June 2012

### Summary of Results

Of the 47 face whitening products sampled from 8 provinces across Thailand, it was found that 1 in 5 of all face whitening creams sampled are contaminated with mercury. The highest level of contamination is 99,070 ppm, while the legal standard for cosmetic products in Thailand is 0ppm of mercury. Moreover, contaminated products contain incomplete labeling according to Thai law. In particular, none of the contaminated products reveal the “notification number” on product labels, meaning that these contaminated products do not exist in the Thai FDA’s database and cannot be traced to the manufacturer should consumers encounter problems from use.

This study did not find any correlation between the price and the level of mercury contamination, which defies the common consumer myth that more expensive face whitening products are safer. The three most expensive face whitening creams are contaminated with mercury, from 3,435 to 47,960 ppm. Meanwhile, the three cheapest face whitening creams contain no mercury or less than 0.05 ppm<sup>\*</sup>.

Moreover, 7 of 10 contaminated products have appeared on the Thai FDA’s list of “dangerous cosmetics, banned from use.” However, they remain widely available on the market across the country and through online stores. Equally alarming is that a number of face whitening creams contaminated with mercury do not yet appear on the Thai FDA’s list of dangerous products.

The situation of mercury contamination in Thai cosmetics is a violation of national law, as well as regulations for the sale of cosmetics in the Southeast Asian region. EARTH is also concerned that the maximum level of mercury contamination found in this sample survey is higher than that found in other Asian countries, such as Bangladesh and the Philippines.

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\* Products either with no mercury content or less than 0.05 ppm of mercury.

Due to current technological limitations, it is unable to detect mercury if the product contains less than 0.05 ppm.

Recommendation:

1. Relevant government agencies must enforce existing laws and monitor manufacturers in abiding by the law more strictly than in the past, particularly in the case of products contaminated with heavy metals, which have accumulative and serious health and environmental impact.
2. Consumers should avoid products with incomplete labeling to ensure manufacturer's accountability, and should contact relevant agencies upon finding incomplete product labels.