

Packaging Food Safety at Nestlé



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Outline

1. Background : Challenges
2. The Nestlé Strategy for Packaging Materials
3. Conclusions

1. Challenges



Nestlé

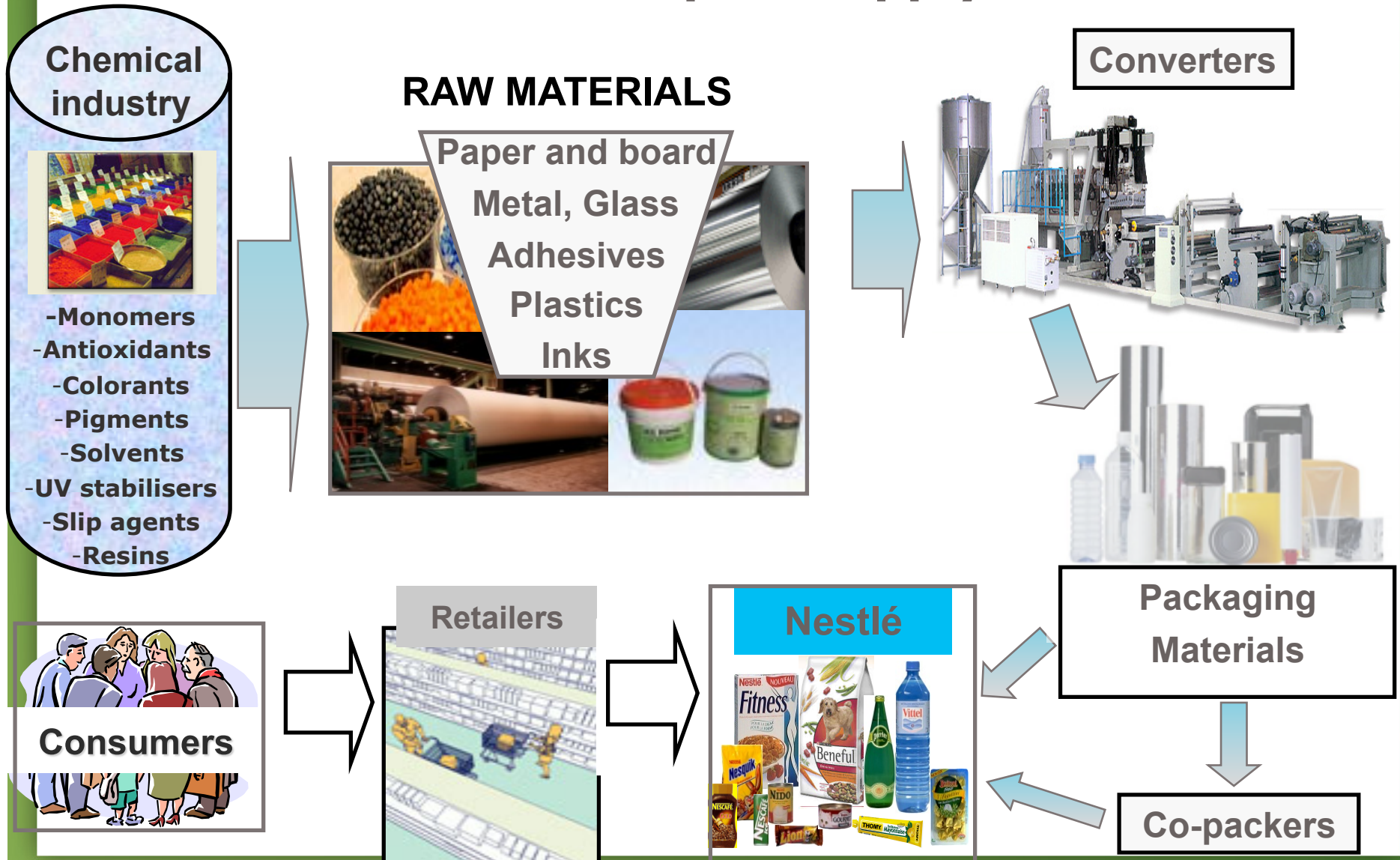


Materials in contact with food and non-food items...

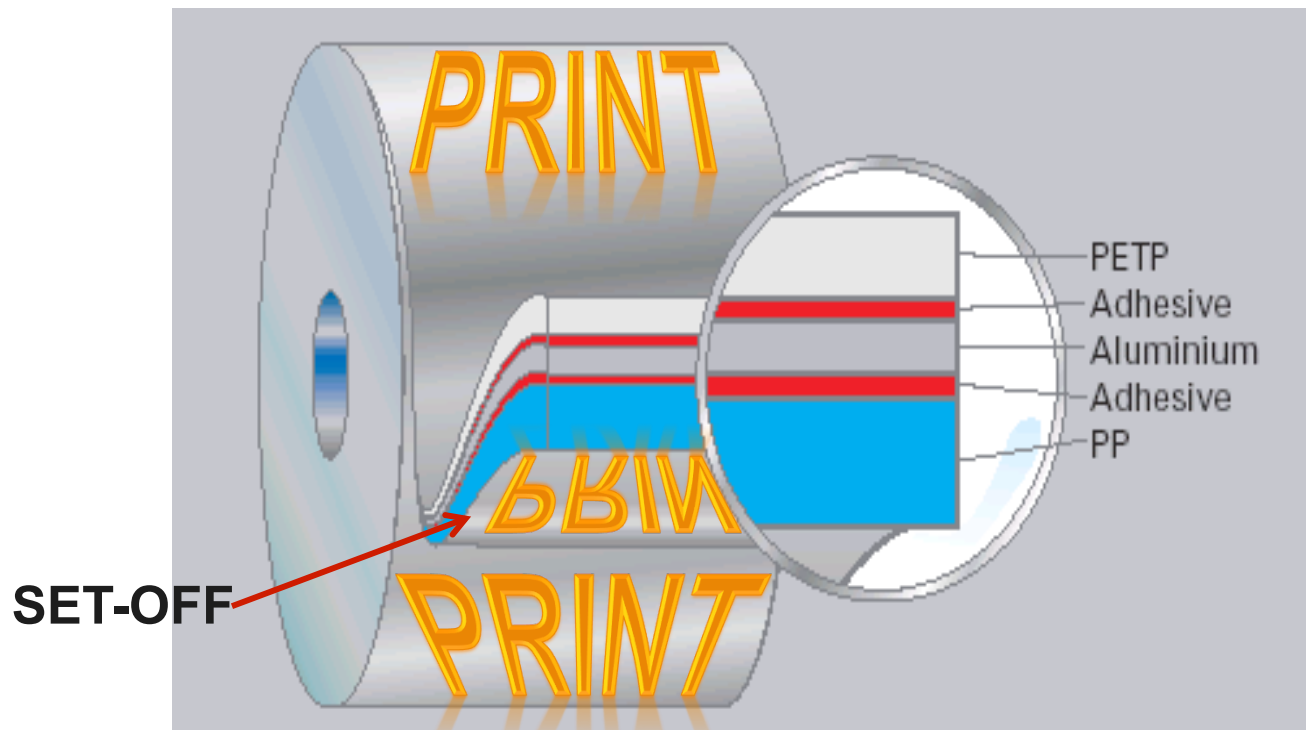


<p>Materials in contact (processing)</p> <ul style="list-style-type: none">Conveyor beltsPlastic mouldsUltrafiltration membranesIon exchange resinsPlastic pipesRubber gasketsCoated tanks	<p>Packaging materials of finished products</p> <ul style="list-style-type: none">PolymersPaper & boardMetalsGlassCoatingsPackaging inksAdhesivesJute and sisal	<p>Promotional items</p> <ul style="list-style-type: none">ToysPremiumsPacifiersAccessories <p>Packaging materials of raw materials and intermediate products</p>
<p>Auxiliary items</p>		
<p>Measuring spoons, Ice cream sticks, Straws</p>		
<p>Fluid systems in beverage dispensing machines</p>		

... induces a complex supply chain !



Set-off phenomena caused a crisis at Nestlé



multi-layer packaging material

Crises affect the whole supply chain

 **WATCH** One-Minute World News

Last Updated: Tuesday, 22 November 2005, 16:57 GMT

 [E-mail this to a friend](#)

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Baby milk scare widens in Europe

Swiss-based food giant Nestle has ordered the recall of baby milk from France, Spain, Portugal and Italy after tests suggested chemical contamination.

Police in Italy, the largest market of the four, have begun seizing 30m litres of the baby milk from shops and depots.



Italian authorities are seizing baby milk cartons across the country

The alarm was raised after traces of a chemical involved in the printing process were found in samples in Italy.

Nestle denies the chemical poses a risk to health but has recalled the cartons, with an expiry date of September 2006.



It takes years to build trust and fidelity in brands and products

It takes seconds to destroy that Trust



The migration of UV photo-initiators was known...

Food Additives and Contaminants, 2002, Vol. 19, No. 2, 168–175



Analysis of food packaging UV inks for chemicals with potential to migrate into food simulants

S. Papilloud* and D. Baudraz

Siepa Printing Inks, Corporate Analytical and Sensory Research Unit, PO Box CH 1000 Lausanne 16, Switzerland

(Received 28 February 2001; revised 28 June 2001; accepted 24 July 2001)

flow). Fouassier (1995) has extensively studied the chemistry of UV photopolymerization. UV inks are environmentally friendly because they generally do not contain any traditional organic solvents. Moreover, the quality of the prints with flexographic machines using UV inks today is outstanding. We believe in their steady growth, especially in very

2. Nestlé strategy for packaging materials



What is the Goal of the Nestlé Packaging Safety and Compliance Initiative?

**To Prevent a Packaging Recall
due to safety and compliance concerns.**

Adherence to national and local government regulatory framework(s)

EU- framework Directive 1935/2004

US FDA- 21CFR and FCN

CONEG and
California Proposition 65

Other Government Regulations



GOV.cn

Chinese Government's Official Web Portal

GB 9685-2008

JETRO

Japan External Trade Organization



印刷インキ工業連合会





**Collaboration and Partnership
throughout the value chain is key!**

Nestlé is committed to delivering good food
This means using safe packaging materials

**Collaboration and Partnership
throughout the value chain is key!**



What packaging material suppliers expect from Nestlé:

- Specifications to include relevant safety requirements, food applications, process conditions, target consumers and specific use.

What Nestlé expects:

- To obtain thorough certification to regulations
- To obtain qualitative composition of packaging material to secure early identification and elimination of chemical contaminants in packaging

Packaging Safety and Compliance Initiative

Nestlé Material Specs





Nestlé Packaging Safety and Compliance Documents Given to Suppliers

Updated Feb 2nd

- Nestlé Guidance Note on Packaging Inks
- Nestlé Standards on Materials in Contact with Food (Abstract)
- Nestlé Certificate of Compliance templates:
 - Regulatory (Part 1) and
 - Chemical Composition (Part 2)

Certificate of Compliance (CoC)



CoC for Regulatory (Part 1) certifies to:

- Food application
- Conditions of use
- FDA (21CFR, FCN, etc) & Canadian Regulations
- Prop 65 (carcinogenic substances)
- CONEG (heavy metals)

CoC for Chemical Composition (Part 2)

- Complete compositional information
- CAS number level of detail
- CONFIDENTIAL DOCUMENT



Product Ingredients Panama

For information about ingredients in a specific brand in the country you have chosen, please go to the box on the right of this page.

For a full list of ingredients added to tobacco in all our brands in the country you have chosen, [click here](#)

For information about tobacco from the list below.

Component

Select a Component

For a full list of ingredients in the country you have chosen



Product Ingredients Panama



Full list of ingredients in non-tobacco components used in Philip Morris International cigarettes manufactured for sale in Panama both in the domestic and duty free markets

Lista completa de ingredientes de materiales distintos del tabaco utilizados en los cigarrillos de Philip Morris International, fabricados para su venta en Panama tanto de los productos a la venta en el mercado doméstico como de los productos vendidos en el mercado libre de impuestos - mercado "duty free"

The following is a full list of the ingredients used in the side seam adhesives in all brands.

[Back to Philip Morris Products in Panama](#)

Side Seam Adhesives

adhesivo de la costura lateral del cigarrillo

Updated 9 February 2011

Ingredient <i>Ingrediente</i>	maximal use level (% in the cigarette) <i>nivel máximo utilizado (% del cigarrillo)</i>	CAS#
ethylene-vinyl acetate copolymer <i>copolímero de etileno y acetato de vinilo</i>	0.2	24937-78-8
polyvinyl acetate <i>acetato de polivinilo</i>	0.2	9003-20-7
hydroxyethylene-vinyl acetate copolymer <i>copolímero hidroxi-etileno vinilacetato</i>	0.1	25213-24-5
polyvinol <i>polivinol</i>	0.005	54626-91-4
processing aids (preservative, defoamer, water) <i>auxiliar del procesamiento (conservador, antiespumante, agua)</i>		

- Home
- > Home > Our Products
- Our Products
- Our Brands
- About Tobacco
- Growing Tobacco
- Cigarette Production
- Other Tobacco Products
- What is in Cigarettes
- > Ingredients
- > Product Information

- PMI Around the World
- Careers
- Media Center



Nestlé Guidance Note on Packaging Inks

Purpose

This document refers to the Nestlé Initiative on Packaging Safety and Compliance and specifically addresses the ink used for decoration on packaging materials. This document equally applies to printing inks, lacquers, coatings and varnishes.

As a rule, only ink ingredients that are listed in the Swiss Ordinance on Materials and Articles can be used. In addition, this document specifies the components, listed in the Swiss Ordinance¹, which must be excluded from ink formulations.

This document **must be shared with Nestlé vendors** and upwards in the packaging value chain (ink makers, coating and overprint varnish manufacturers).

Contents

This Note contains the following Exclusion Lists:

	Page
Table 1: General exclusions	2
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Table 3: Exclusion list for photo-initiators (UV printing)	3
Table 4: Exclusion list for acrylates (UV and EB printing)	4
Table 5: Exclusion list for solvents	4

How were selected the components on the lists?

These components have been excluded from food contact packaging because of:

- (i) uncertain or adverse toxicity
- (ii) perceived risk by consumers, media, NGO, etc.
- (iii) demonstrated migration potential
- (iv) negative sensory impact on the packed food or in points of sale

General

Table 1: General exclusions

- Titanium Acetyl Acetate (TAA) must not be used as an adhesion promoter
- Phthalate plasticizers must not be used
- Nitrocellulose resins must not be used in cases where the packaging is heated with food prior to consumption (more than 30 min at 100°C)
- Vegetable oils/fatty acid esters with strong odors must not be used (offset inks)
- Cobalt-based drying systems must not be used (offset inks)

Photo-initiators Nestlé recommends the use of photo-initiators mentioned in List A of the Swiss Ordinance, i.e. those for which toxicological data exist.

Table 3: Exclusion list for photo-initiators

PI Name	CAS Number	Swiss Ordinance	Reason to exclude
2-Hydroxy 2-methyl propiophenone	7473-98-5	B	Sensory impact Migration /contamination potential
2-(Dimethylamino)ethyl benzoate	2208-05-1	B	Migration /contamination potential
Benzophenone type: - Benzophenone - 2-Methyl benzophenone - 4-Methyl benzophenone - 2,4,6-trimethylbenzophenone	119-61-9 131-58-8 134-84-9 954-16-5	A A A B	Sensory impact Migration /contamination potential
1-Hydroxycyclohexyl phenylketone	947-19-3	B	Sensory impact Migration /contamination

Photo-initiators Nestlé recommends the use of photo-initiators mentioned in List A of the Swiss Ordinance, i.e. those for which toxicological data exist.

Table 3: Exclusion list for photo-initiators

PI Name	CAS Number	Swiss Ordinance	Reason to exclude
			Sensory impact

- 4-Isopropyl 9H-thioxanthen-9-one	83846-86-0	A	Doubtful toxicology
- 2-Isopropyl 9H-thioxanthen-9-one	5495-84-1	A	Perceived issue
2,4-Diethyl 9H-thioxanthen-9-one	82799-44-8	B	Doubtful toxicology
Diphenyl (2,4,6-trimethyl benzoyl) phosphine oxide	75980-60-8	A	Doubtful toxicology Perceived issue

Remark: This exclusion list is not valid for UV printing on metal substrates (cans, closures) with a curing process.

Acrylates

Table 4: Exclusion list for acrylates

Chemical name	CAS number	Swiss ordinance
Butanediol Diacrylate (BDDA)	1070-70-8	B
Diethylene glycol diacrylate (DEGDA)	4074-88-8	B
2-Ethyl hexyl acrylate (2EHA)	103-11-7	A
Isodecyl acrylate (IDA)	1330-61-6	B
Octyl acrylate (ODA)	2499-59-4	A
Phenoxy ethyl acrylate	48145-04-6	B
1, 6-Hexanediol diacrylate (HDDA)	13048-33-4	B
Mixtures of pentaerythritol tri- and tetra-acrylates (PETA)	3524-68-3	B
Tetraethylene glycol diacrylate (TEGDA)	17831-71-9	B

Solvents

Table 5: Exclusion list for solvents

Chemical name	CAS number	Swiss ordinance
2-Methoxyethanol (methyl glycol)	109-86-4	A
2-Ethoxyethanol (Ethyl glycol)	110-80-5	A
Monochlorobenzene	108-90-7	A
Toluene	108-88-3	A
1-methyl-2-pyrrolidone	872-50-4	A

Additional solvent:

- Benzene

Swiss Ordinance for Inks



The Swiss Ordinance includes two parts:

- Part A which lists the substances that have been toxicologically evaluated and for which a Specific Migration Limit (SML) has been set.
- Part B which lists the non-evaluated substances for which the default SML has been set at 0.01 mg/kg (1 ppb)
- Note: SML refers to what migrates into food or food simulants.

English translation of Swiss Ordinance:

<http://www.bag.admin.ch/themen/lebensmittel/04867/10015/index.html?lang=en>

Swiss Ordinance for Inks



What does this mean for migration of inks?

List B: not supposed to migrate into the food
– limit 10 ppb ($\mu\text{g}/\text{kg}$)

List A: ok to migrate into food up to the limit specified.

Migration



How can you ensure that migration is low enough?

- 1) Test the food
 - (expensive)

- 2) Use a functional barrier
 - (a what?)

Functional Barrier



A **functional barrier** may be considered to be a barrier consisting of one or more layers which either:

- reduces the migration of authorised monomers and plastics' additives below the specific migration limit (SML) or
- reduces the migration of unauthorised substances into foods or food simulants to a 'not detectable' level.

Functional Barrier



These conditions may be achieved in several ways:

- through the use of an absolute barrier,
- by using a barrier layer which reduces migration to toxicologically insignificant levels, or
- via a barrier layer which provides sufficient migration lag time to limit the migration of a monomer or additive to toxicologically insignificant levels during the food contact period.

 Source: Castle et al

Functional Barrier



- Polyolefines, EVA are **not** good functional barriers
- PET, PolyAcryloNitrile (PAN), PVC, PVDC, Nylon (PA), EVOH : can be efficient functional barriers if sufficiently thick layers used
- PET, PA, EVOH : functional barrier efficiency is reduced by water vapour

 Source: Feigenbaum et al

Functional Barrier



Absolute Functional Barriers:

- Glass,
- Metal Cans
- Aluminum foil 9 μ m

3. Conclusions



Since recent crises, **the packaging world has changed**

All the value chain will benefit from better knowledge on packaging materials

Nestlé seeks:

- More technical information sharing on packaging materials
- Science-based partnerships

Nestlé is looking forward to better and stronger partnerships



- Last thoughts



If you only remember one thing from my presentation today, it should be:

Collaboration and Partnership throughout the value chain is key!



Thank you for your attention

