

# EU FOOD FRAUD NETWORK COORDINATED CASE

Adulteration of  
beeswax intended  
for honey  
production with  
stearin and paraffin

Beeswax is, in principle,  
a manufactured product –  
manufactured by bees





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# Beeswax on the EU market

## FOOD GRADE

Beeswax - **natural wax** obtained by melting the walls of the honeycomb made by the honey bee.

Authorised food additive under Reg. (EU) 231/2012



Natural beeswax is limited and expensive – bees produce only 1 kg of wax for each 8 kg of honey.

European production of beeswax is not sufficient to cover demand.

## Mix of natural beeswaxes

- Mineral waxes (paraffin and microcrystalline waxes)
- Industrially-produced fatty acids (stearic acid, palmitic acid)
- Plant waxes (including Sumac wax)
- Waxes of ester type combined with mineral hydrocarbons (synthetic waxes)

Sales of beeswax *without indicating* that it contains other "waxes" is ***misleading*** and thus ***illegal***.\*\*

## Animal By-Products cat. 3\*\*\*

Imported beeswax and its products must be processed; apiculture by-products are **not intended for human consumption.**

Reg. (EC) 1069/2009



\*Reg. (EU) 231/2012, laying down specifications for food additives listed in Annexes II and III to Regulation (EC) No 1333/2008 of the European Parliament and of the Council.

\*\*Directive 2006/114/EC concerning misleading and comparative advertising prohibits traders to conduct misleading advertising vis-à-vis other traders (B2B)

\*\*\*Reg. (EU) No 142/2011, implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption. Annex XIV, Table 2.  
\*\*\*\*Art. 3 Directive 2006/114/EC

# Adulterated Beeswax Economic Gain

Average price of paraffin/stearin: **6 € per kg**

Average price of beeswax: **13 € per kg**



*Ukrainian batch of 7 010kg:*

**52% of paraffin** – economic gain = **25 516 €**  
(3,64 € per kg)

*Chinese batch of 20 000kg:*

**5,5% of paraffin** – economic gain = **7 700 €**  
(0,39 € per kg)

*Chinese batch of 20 000kg:*

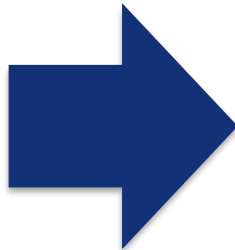
**12,2% of stearin** – economic gain = **17 080 €**  
(0,85 € per kg)



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# Potential effects of stearic and palmitic acid on Bee health

Beeswax sheets



Paraffin



Stearin

*Adulterated embossed waxes have been incriminated in a number of brood mortality incidents in Europe: BE, DE, NL...*





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# Potential effects of stearic and palmitic acid on Bee health



- Addition of 15-35% stearic acid to beeswax = Impact on brood.
- Mean larva mortality of 49-71% observed in broods where stearic acid is present.

Various field studies appear to confirm this risk  
*Example: Reybroeck W.ILVO, 30 June 2017, Research Institute for agriculture, fisheries and food ILVO.vlaanderen*



# Public health: Potential risk related to the use of adulterated beeswax in the food chain ?



Companies are offering honeycomb in jar to demonstrate

What controls are put in place to ensure that only pure beeswax intended for Human consumption are in the jar ?



What are the the risks ?

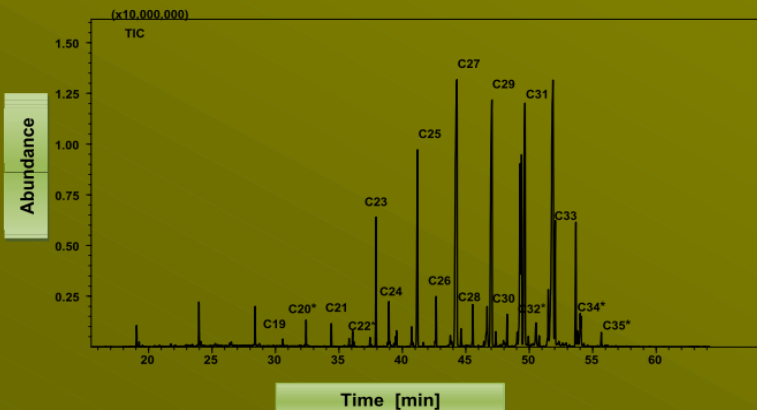


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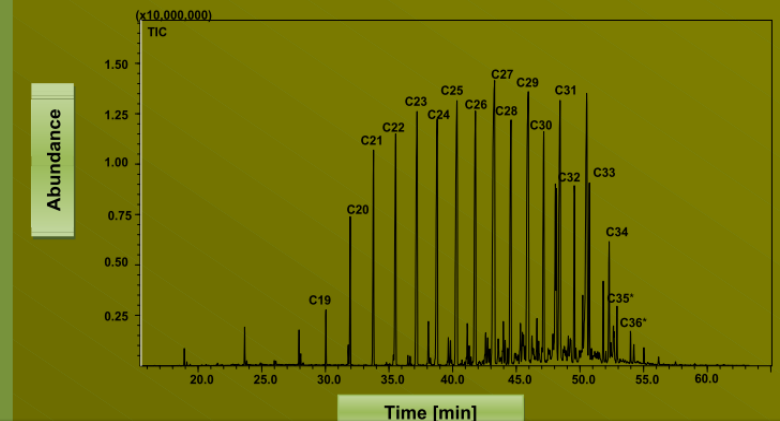
## Lack of EU regulatory specification for beeswax

### Lack of an EU official method for adulteration detection

Chromatogram of alkanes in natural beeswax



Chromatogram of alkanes in samples of paraffin – adulterated beeswax



Author: <http://www.ihc-platform.net/ewawax2008.pdf>



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# Fraud Criteria

## 1. Violation of EU Food Law

- **Directive 2006/114/EC (not EU Food Law)**  
Misleading advertising to other traders (B2B)
- **Reg. 1069/2009 Animal By-Product:**  
Beeswax imported as Cat. 3 (beekeeping) instead Cat. 2 (candles)
- **Reg. 231/2012 on food additives:**  
Introduction in the Food Chain (additive, food supplements, honeycomb)

## 2. Intention

**Adulteration of beeswax with cheaper "waxes"**

## 3. Economic gain

- Retail price of **beeswax** is **13 €/kg vs paraffin** (candlewax) **6 €/kg**
- **Economic gain: 1 tonne of 30% adulterated beeswax = 2100€**

## 4. Deception of Customers

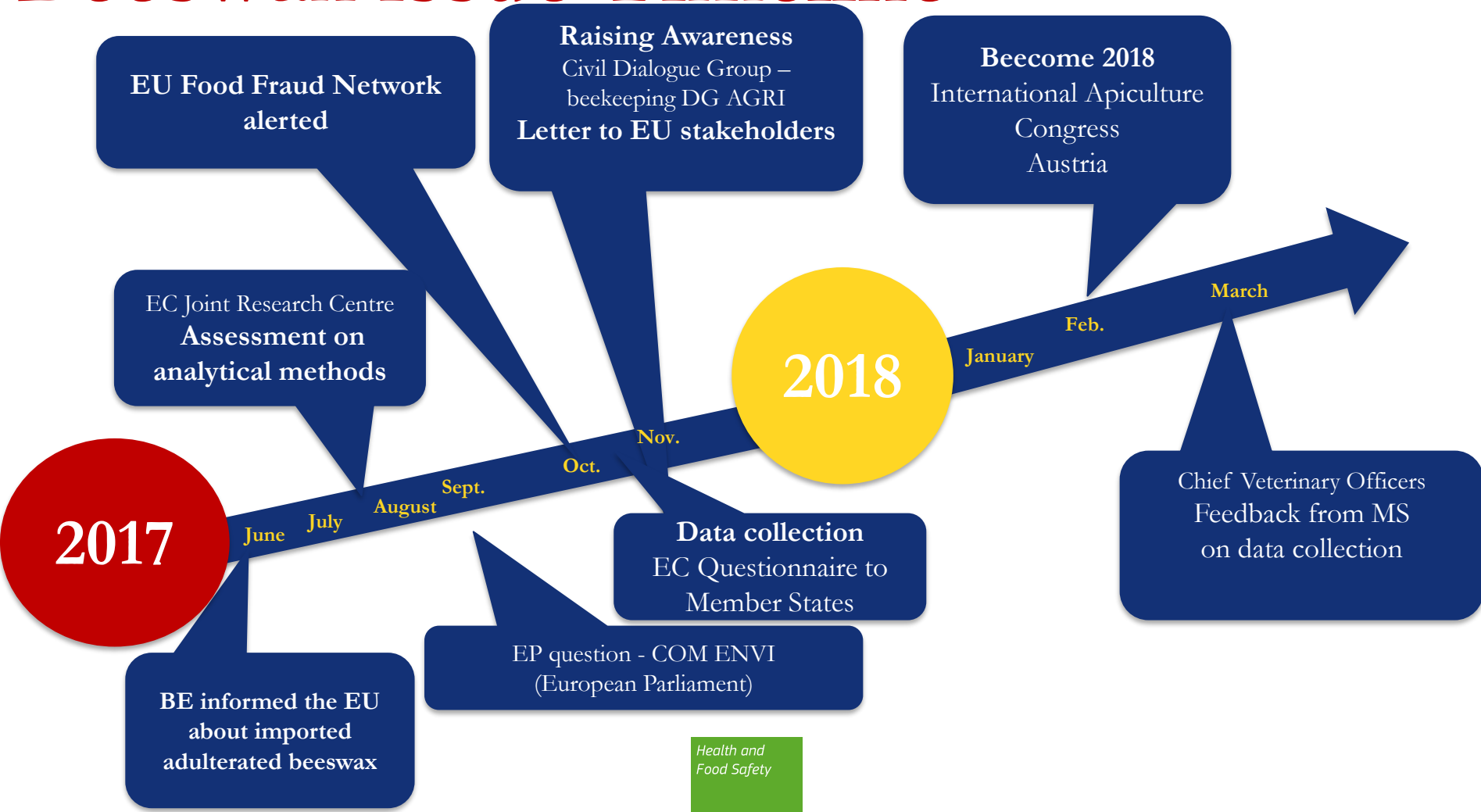
- Customers believe they are using an authorised and safe product
- **Bee health:** negative issues on brood development – significant mortality of bees
- **Public health :** consumption of beeswax containing non-food grade ingredients





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# Beeswax issue Timeline



## What could be the next steps?

- *Risk assessment by EFSA ? (depending on data)*
- *Advice to stakeholders:  
request guarantees that you buy pure beeswax!*
- *EU coordinated control plan on beeswax ?*
- *Legislation including beeswax purity criteria in relation to food safety/bee health ?*



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# Useful links and mailboxes

## **DG SANTE Website – Food fraud**

[https://ec.europa.eu/food/safety/food-fraud\\_en](https://ec.europa.eu/food/safety/food-fraud_en)

## **EU Food Fraud Network: Contact points**

[https://ec.europa.eu/food/sites/food/files/safety/docs/food-fraud\\_contact\\_points.pdf](https://ec.europa.eu/food/sites/food/files/safety/docs/food-fraud_contact_points.pdf)

**DG SANTE mailbox:** [SANTE-FOOD-FRAUD@ec.europa.eu](mailto:SANTE-FOOD-FRAUD@ec.europa.eu)