

'FAKE RICE' on AFRICAN AND ASIAN MARKETS

Rumour or Evidence?

Factsheet – December 2017

'FAKE RICE' PUBLIC CONCERN

In June 2017, local journals and social media warned about the presence of plastic rice on the markets of Ghana, Nigeria and India. Similar rumours have been circulating in the press in Asia since 2016. This rice is made by mixing sweet potatoes and a polymer. But other versions also mention plastic pellets being mixed with normal rice. This type of falsifications may cause gastritis and other stomach related diseases. However, official controls could not confirm the presence of plastic rice.

Videos of rice bouncing and burning like plastic are presented as identification methods for plastic rice. Plastic rice is suspected of being mixed with normal farm rice from China. The rumour notes that there is no scientific rice testing method developed yet to detect plastic rice before entering the market, except by a 'burning' test.

When cooked, it is supposed to remain hard and to form a plastic sheath on the surface. This sheath, when burned with fire, burns in the same way as plastic. In addition, cooked rice kneaded into a round shape can bounce off a hard surface. Videos showed individuals moulding cooked rice and hitting it against a wall. The rice, which bounced back was considered as plastic although identified as natural rice when it disintegrated.

2010

2010 The term **'FAKE RICE'** was used for the first time. The Chinese company Wuchang was accused of mixing high-quality rice with another of lower quality, and selling it under the same label.

2011

2011 The term **'PLASTIC RICE'** was used for the first time.

The Vietnamese website "Very Vietnam" claimed that Chinese authorities had confiscated rice made of potatoes and synthetic resin containing traces of plastic, called "plastic rice" (without specifying the percentage of plastic). The American website Snopes demonstrated that the story was never corroborated. However, it popped up again several times between 2011 and 2016.

'FAKE RICE' ON THE SOCIAL MEDIA (2010-2016)



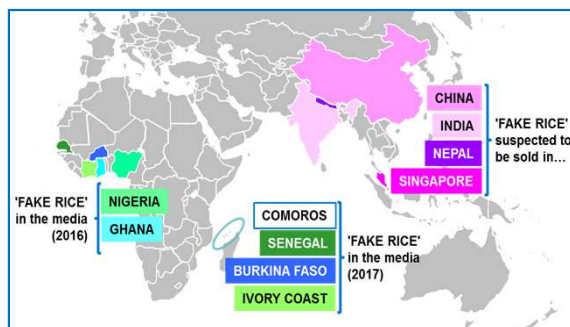
2015. The European Parliament issued two motions on **'PLASTIC RICE'** (see references) to conduct an investigation into the subject and to limit certain imports.

2016

2016. The European Commission responded to an EP question on the risk of **'SYNTHETIC RICE'** from China entering the EU market. No incidents have been reported by Member States.

Some videos on the social media about 'plastic rice'.

COUNTRIES AFFECTED:



FOOD SAFETY AUTHORITIES' OPINION:

1. FDA Ghana:
 - The Food and Drug Authority (FDA) of Ghana is the National Regulatory Authority. On 26 June 2017, the Chief Executive Officer (CEO) of the FDA Ghana challenged the rumour on plastic rice in Ghana. After conducting a series of investigations and tests, the FDA concluded that there is no plastic rice on the Ghanaian market and that that the tests conducted by the Authority proved that the rice currently on the Ghanaian market is authentic and has a very high starch content. Regulatory authorities monitored rice imports from countries purported to produce the plastic rice. The public was encouraged to present samples of any suspicious rice to the FDA.
 - The Head of the Food Safety Management Department of the FDA Ghana ensured that every bag of rice imported into Ghana was certified and that FDA intensified its surveillance activities. It was noted that at no point were confirmed cases of large amounts of plastic chips passed off as rice.
2. WHO - International Food Safety Authority Network - INFOSAN:

The WHO International Food Safety Authority Network (INFOSAN) also investigated the issue. It confirmed the authenticity of the rice analysed. The activity report 2014/2015 mentions fake rice, but this refers to the other falsification process, the mixing of potatoes with resin.

3. EFSA:

The European Food Safety Authority (EFSA) established an Emerging Risks Exchange Network (EREN) to exchange information between EFSA and the Member States (MS) on possible emerging risks for food and feed safety in 2010.

The Network is currently composed of delegates from 22 Member States and two EFTA countries (Norway and Switzerland) designated through the Advisory Forum of EFSA and observers from the European Commission, the US Food and Drug Administration (US FDA), the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO).



Videos of plastic pellets production and identification methods:

Several videos about plastic rice circulated on **YouTube** around November and December 2016 although no video shows evidence of the packaging, labelling and marketing of these pellets as real rice.

In 2015, the UK authorities identified and assessed a total of 13 potential emerging issues, with artificial plastic rice being one of them. As in the INFOSAN report, the EFSA report does not refer to the fabrication of plastic pellets from recycled plastic bags, but rather to the mixing of potatoes with resin.

OPINIONS ABOUT IDENTIFICATION METHODS:

- The FDA in Ghana observed that the physical and chemical properties of plastics are such that they cannot be reconstituted into edible food because plastic can neither absorb nor mix with water.
- According to the FDA Ghana, plastic does not melt at 100° C – the temperature at which real rice could be cooked. Consequently, plastic granules will remain solid at 100° C. This is in contrast with the declaration by the Nigerian customs office that noted that after boiling at 100° C, suspicious plastic rice becomes sticky.
- Regarding rice bouncing, the FDA Ghana declared that the textural properties of rice are due to the nature of their starch content, in particular, to the ratio of amylose and amylopectin. Amylopectin is responsible for the sticky quality of rice, while amylose causes its gelatinous and tough nature. The combination of these characteristics explains why the rice bounces. In this case, the higher the amylose content, the greater the bounce .
- Similarly, the Senegalese Food Technology Institute conducted various tests on suspicious rice, observing that with time, the amylose content diminishes, while the amylopectin increases. When this rice is heated, it becomes very sticky and if dried, it becomes extremely condensed and can easily bounce.

KNOWLEDGE GAPS

According to the information available, the following gaps can be identified and could provide a basis for further investigations if required:

- A communication gap was evidenced by of the lack of response from INFOSAN members in China to the inquiries made by the INFOSAN Secretariat-WHO.
- Lack of information on the type of resins used and their physical properties essential to properly carry out the necessary Risk characterisation in a typical fraud case. In addition, it is unclear to ascertain the method used by FDA Ghana to assess the absence of resin in rice;
- Gaps in the analytical methodologies to test "fake rice" are apparent.
- Lack of information on organoleptic properties, notably the smell of suspicious rice during a 'burning test' and the texture of a mixture of real rice and plastic rice after cooking in boiling water.
- No report is currently available on national or international follow-ups of this emerging issue. Given that an EFSA annual report on emerging risk is published after every second year (reports 2013 and 2015 available) and issued between July and November of the following year, we can expect an update on the emerging issues by the end of 2018.
- The economic aspects of the "fake rice" were not investigated. For example, the issue of protectionism to boost both local consumption and African rice exports may exist and be arguably maintained through targeted information designed to become viral in its scope of dissemination aimed at provoking widespread public concern and distrust in imported rice in order to discourage public dependence on it.

REGULATORY AND LEGAL FRAMEWORK

Article 53 of Regulation (EC) N. 178/2002 provides the legal basis for emergency measures where there is evidence that food or feed is likely to constitute a severe risk to human health.

The Commission is carefully monitoring the EU rice market, including the level of imports. Regarding the EU-Vietnam Free Trade Agreement, the conclusion announced in December 2015 is not expected to be enforced until the end of 2017 at the earliest. There is, therefore no evidence to suggest its impact on the EU industry (**E-000350/2016**).

REFERENCES

Press releases:

- <http://www.bbc.com/news/blogs-trending-40484135>
- <http://thebftonline.com/business/agribusiness/25132/purported-plastic-rice-authentic-fda.html>
- <http://dailyguideafrica.com/fda-allays-fear-plastic-rice/>
- <http://3news.com/fda-to-intensify-surveillance-as-plastic-rice-emerges-in-nigeria/>
- <http://observers.france24.com/en/20170613-investigation-%E2%80%9Cplastic-rice%E2%80%9D-part-1-videos-tricking-african-social-media>
- <http://observers.france24.com/en/20170614-investigation-%E2%80%9Cplastic-rice%E2%80%9D-part-2-origins-african-internet-hoax>
- <http://citifmonline.com/2017/06/23/we-found-no-plastic-rice-in-ghana-fda/>

Ghana's Governmental website:

- <http://ghanatrade.gov.gh/Trade-News/there-is-no-plastic-rice-on-ghanaian-market-fda.html>
- <http://www.eservices.gov.gh/FDB/SitePages/FDB-Home.aspx>

EFSA Annual report of the Emerging Risks Exchange Network 2015:

- <http://onlinelibrary.wiley.com/doi/10.2903/sp.efsa.2016.EN-1067/pdf>

INFOSAN report:

- <http://apps.who.int/iris/bitstream/10665/246204/1/9789241510592-eng.pdf?ua=1>

About melting point plastic:

- <http://education.seattlepi.com/hot-water-melt-plastic-3626.html>
- <http://members.tm.net/lapointe/Plastics2.html>

About amylose and amylopectin properties:

- http://www.aaccnet.org/publications/cc/backissues/1996/documents/73_415.pdf

EU actions:

- Motion for a EP resolution on plastic rice from Asia (**B8-1286/2015**)
- Motion for a EP resolution on checks to prevent the sale on EU markets of Chinese synthetic rice, a serious threat to the health of EU citizens (**B8-1447/2015**)
- EC answer (**E-000350/2016**) to EP question on 'synthetic rice' from china: a new public health threat (**E-000350-16**).

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