Maleic Acid in Food

Trade Consultation Forum

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What is maleic acid?

- **Maleic acid**, as well as its related chemical, **maleic anhydride**, are multi-functional chemical intermediates with many industrial applications and can be **used in food contact materials (FCMs)**.
- Maleic acid can also be used as a precursor for the **production of food additives**.
- Maleic anhydride readily converts to maleic acid in the presence of water, and is often expressed as maleic acid during food testing.

How are we exposed to maleic acid?

- Members of public may be exposed to maleic acid at low level via the oral route
  - Maleic acid can be used in food contact materials and may **migrate to food**
  - Food additives which may contain maleic acid as an **impurity** may be used for food production

How does maleic acid become present in large quantities in food?

- Upon investigation by the Taiwan authority, the food incident has been linked to the **abusive use of maleic anhydride during the production of modified starches**
  - Some were used to manufacture further starch-containing food products

What is the toxicity of maleic acid?

- Animal studies have shown that maleic acid is not toxic to the genes, and is negative for reproductive and developmental toxicity.
- Nevertheless, **effects on the kidney** had been observed when experimental animals were fed with high doses of maleic anhydride.
- The current toxicological information indicates the **relatively low acute toxicity** of maleic acid by the oral route.

Can maleic acid be used as food additive?

- Available toxicological evaluation data **does not support the safe use of maleic acid directly in food as food additives**.

- Some overseas authorities such as those in Taiwan and Singapore prohibit its direct application in food as food additives for manufacturing of food products.

What is the possible food safety concern for maleic acid?

- Dietary exposure to maleic acid may exceed the respective health-based guidance value, i.e. the **group tolerable daily intake (TDI) of 0.5 mg/kg bw/day** (as maleic acid) for maleic acid and maleic anhydride established by the European Scientific Committee for Food.

What are the actions taken by CFS?

- Contacted the Taiwan authorities promptly for further information, alerted Traders and conducted active surveillance.
- No affected batches of the food products known to be involved in this food incident were found to be available in the local market.
- As a prudent measure, CFS collected 20 samples imported from Taiwan which might contain modified starches (e.g. rice vermicelli, bean vermicelli, wheat noodles and milk tea with pearl tapioca etc) for testing of maleic acid; **all results were satisfactory**.
- CFS will continue to liaise with the Taiwan authorities and closely monitor the development of the incident.

Thank you