FRAUD: A SOUTH AFRICAN PERSPECTIVE, WITH REAL EXAMPLES AND CONTEXT

Dr Harris Steinman
‘Of all the frauds practices by mercenary dealers, there is none more reprehensible, and at the same time more prevalent, than the sophistication of the various articles of food’

Fredrick Accum, *A Treatise on Adulterations of Foods and Culinary Poisons* (1820)
Accum (1820)

- Determined that adulteration was a widespread practice:
  - bakers cut their flour with alum, chalk, plaster and sawdust to make them heavier
  - brewers adding bitter substances such as strychnine to beer
  - Lead, copper or mercury salts to make bright coloured sweets and jellies

- Successful prosecutions in the United Kingdom (UK) for counterfeiting and adulteration of tea, coffee, bread, beer, and pepper.

- Both a concern with regard to food safety as well as being of a food standards issue.
**Terminology**

- **Substitution**
  - Sunflower oil partially substituted with mineral oil
  - Hydrolyzed leather protein in milk

- **Concealment**
  - Poultry injected with hormones to conceal disease
  - Harmful food colouring applied to fresh fruit to cover defects

- **Dilution**
  - Watered down products using non-potable / unsafe water
  - Olive oil diluted with potentially toxic tea tree oil

- **Counterfeiting**
  - Copies of popular foods - not produced with acceptable safety assurances.

- **Mislabelling**
  - Expiry, provenance (unsafe origin)
  - Toxic Japanese star anise labeled as Chinese star anise
  - Mislabeled recycled cooking oil

- **Unapproved Enhancements**
  - Melamine added to enhance protein value
  - Use of unauthorized additives (Sudan dyes in spices)

- **Grey Market Production/Theft/Diversion**
  - Sale of excess unreported product
Leading EMA Incidents by Type of Adulteration (1980 to date)

Source: Compiled by NCFPD EMA Incident Database (January 6, 2014), based on 306 reported incidents.
FOOD FRAUD: TYPE OF ADULTERATION

Figure 2: Fifteen Most Problematic Ingredients for EMA.2

FOOD FRAUD / ADULTERATION - INTENT

- Intentional
- Unintentional
### Table 1 (Continued)

<table>
<thead>
<tr>
<th>No.</th>
<th>Product</th>
<th>Wheat-free claim</th>
<th>Gluten-free claim</th>
<th>Wheat PCR</th>
<th>ELISA (mg/kg gluten)</th>
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<tbody>
<tr>
<td>17</td>
<td>Rice breakfast cereal</td>
<td>×</td>
<td>✓</td>
<td>(−)</td>
<td>&lt;5.0</td>
</tr>
<tr>
<td></td>
<td>(Brand B)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Rice breakfast cereal</td>
<td>×</td>
<td>✓</td>
<td>(−)</td>
<td>&lt;5.0</td>
</tr>
<tr>
<td></td>
<td>(Brand C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>19</td>
<td>Rice breakfast cereal</td>
<td>×</td>
<td>✓</td>
<td>(−)</td>
<td>&lt;5.0</td>
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<tr>
<td></td>
<td>(Brand D)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>20</td>
<td>Maize breakfast cereal</td>
<td>×</td>
<td>✓</td>
<td>(−)</td>
<td>18.0</td>
</tr>
<tr>
<td></td>
<td>(Brand A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>21</td>
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<td>(−)</td>
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<tr>
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<td>(Brand B)</td>
<td></td>
<td></td>
<td></td>
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<td>(−)</td>
<td>5.2</td>
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<tr>
<td></td>
<td>(Brand C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>23</td>
<td>Brown rice flour</td>
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<td>(−)</td>
<td>6.6</td>
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<tr>
<td>24</td>
<td>Maize flour</td>
<td>×</td>
<td>✓</td>
<td>(−)</td>
<td>18.2</td>
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<tr>
<td>25</td>
<td>Millet flour</td>
<td>×</td>
<td>✓</td>
<td>(−)</td>
<td>7.3</td>
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<tr>
<td>26</td>
<td>Rye bread</td>
<td>×</td>
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<td>(−)</td>
<td>&gt;80</td>
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<tr>
<td>27</td>
<td>Muesli</td>
<td>✓</td>
<td>✓</td>
<td>(−)</td>
<td>12.0</td>
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<tr>
<td>28</td>
<td>‘Slimmers’ shake</td>
<td>×</td>
<td>✓</td>
<td>(−)</td>
<td>5.6</td>
</tr>
</tbody>
</table>
September 2015

Testing of Products Initiated by Consumers

TOPIC
Quinoa
October 2016

“The fact is that both those rolls have been scientifically proven to contain wheat, and thus gluten, contrary to what was stated on the label. That’s food fraud.”
MEAT SPECIES – “DONKEY”

- UK - Media 16 January 2013
- South Africa - 26 Feb 2013
139 samples evaluated

1. Minced meat products
2. Burger patties
3. Deli meats
4. Raw sausages
5. Dried meats

**Not detected:**
- Horse
- Rabbit
- Hare
- Goose
- Mallard duck
- Muscovy duck

**Detected / Undeclared**
- Soya
- Gluten,
- Beef
- Water buffalo
- Pork
- Sheep
- Goat
- Donkey
- Chicken

discovered in 68% of 139 meat samples from shops and butcheries
Raw sausages
Pork was only declared in two of the 35 sausage samples analysed,
Pork detected in 17 (52%) samples for which no indication of presence on the labels

Chicken found as substitute or contaminant in sausages, undeclared in 12 (39%) sausage samples

Mince
Pork was only declared in one of the 41 mince products tested.
15 of 40 (38%) samples in which pork was not declared tested positive for this species
The number of meat samples in each product category testing for various levels of undeclared soya (A) and gluten (B).
MEAT SPECIES: CONSEQUENCES

- Researcher stifling
- NCC (National Consumer Commission)
- Game study
University of the Western Cape

- Biltong tested between 2009-2012
- 146 samples (14 beef and 132 game labels)
- Over 100 contained undeclared meat species
- No beef samples were substituted
- Game meat: 76.5% substitution
- Mountain zebra - IUCN red listed species

2011

- Orion is alleged to have falsely labelled certain meat products, including kangaroo and pork, as halaal, according to media reports last week. [1]
- Blamed “religious hype” over the controversy for forcing clients to cut ties with it.
- Milk powder for which it has not paid.
- Goods rejected because did not have production, expiry dates and batch codes on the bags.
- Another client had also requested outstanding GMO and allergen certificates.
2011

- Surveys of restaurants \((n = 215)\) and retail outlets \((n = 200)\)
- 21% mislabelled

- Of 34 fish types observed in restaurants and the 70 fish types observed in retail outlets, only 16 (47%) and 26 (37%), respectively, were listed on the SASSI green list

- 12 of the 34 fish (35%) marketed in restaurants and 21 of the 70 fish (30%) marketed in retail outlets were on the SASSI orange list

2011

- Red list: SASSI red-list species, was observed being marketed in restaurants and retail outlets.

- “Misnaming or mislabelling of fish, whether accidental or deliberate, clearly holds significant economic, health and conservation implications”
2015

- Collected from retail outlets in the same provinces
- Some improvement (18%) compared to 2011 study (21%)
- Similar misrepresentation rates in restaurants (18%) and retail outlets (19%)

2016

- 24 of 77 (31%) crustacean products were misrepresented

- 10% products were potentially misleading:
  species inferred from the common names or general descriptions inconsistent with
  species identified through DNA sequencing

- 21% products:
  genetically identified as different species to those declared on the labels
‘People remember the horse meat scandal, but they don’t remember the fish fraud.’

SNAPTRACE project
Professor Stefano Mariani, University of Salford, UK
Spice & Herb Peanut Reports Generated
(31.07.2015 - 24.03.2017)

- 73.32% Peanut Detected
- 21.64% Peanut Not Detected
SPICE: PEANUT PER CATEGORY

Summary of Peanut Detection per Category

- Blends
- Bark & Seeds
- Leafy Herbs
- Roots & Bulbs
- Cumin
- Paprika
- Cayenne / Chillies

- Peanut Not Detected
- Peanut Detected
SPICE: PEANUT IN CHILLI
Of the 36 Bulbs & Roots Samples That tested Positive

- Garlic: 70.00%
- Onion: 10.00%
- Ginger: 20.00%
- Tumaric: 0.00%
<table>
<thead>
<tr>
<th>Product</th>
<th>Result1</th>
<th>Result2</th>
</tr>
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<tbody>
<tr>
<td>GARLIC POWDER</td>
<td>&gt;20.0</td>
<td>&gt;20.0</td>
</tr>
<tr>
<td>GARLIC POWDER</td>
<td>&gt;20.0</td>
<td>&gt;20.0</td>
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<tr>
<td>GINGER POWDER</td>
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<td>&gt;20.0</td>
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<tr>
<td>GARLIC POWDER 1ST GRADE INTERNAL</td>
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<td>&gt;20.0</td>
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<tr>
<td>Garlic Powder</td>
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<td>&gt;20.0</td>
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<td>GARLIC POWDER INTERNAL</td>
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<td>&gt;20.0</td>
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<td>&gt;20.0</td>
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<tr>
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<tr>
<td>Garlic powder</td>
<td>&gt;20.0</td>
<td>&gt;20.0</td>
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</table>
➢ Authenticity

➢ Adulterated or contaminated?

Starch
PEPPERCORNS - PAPAYA SEEDS

Real peppercorns mixed with dried papaya seeds
• Paprika - pure

• Paprika Powder Product Specification
  • Defatted paprika powder, Paprika powder, Vegetable oil, Anti caking agent

• Paprika Spent Raw Material Specification
  • Powder obtained by the milling of pods and then extraction of the oleoresins from the powder using hexane
<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Adulterant</th>
<th>Type of Fraud</th>
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<tbody>
<tr>
<td>Paprika</td>
<td>Lead tetraoxide</td>
<td>Addition</td>
</tr>
<tr>
<td>Paprika</td>
<td>Sudan I, II, III, or IV dyes</td>
<td>Addition</td>
</tr>
<tr>
<td>Paprika</td>
<td>non-authentic geographic origin</td>
<td>Replacement</td>
</tr>
<tr>
<td>Paprika</td>
<td>Color additives</td>
<td>Replacement</td>
</tr>
<tr>
<td>Paprika</td>
<td>Defatted paprika</td>
<td>Removal</td>
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<tr>
<td>Paprika</td>
<td>Lead oxide</td>
<td>Replacement</td>
</tr>
<tr>
<td>Paprika</td>
<td>Turmeric</td>
<td>Replacement</td>
</tr>
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</table>
Carel Morren
Forensic Chemistry Laboratory (Cape)
- Preservatives, esp. sauces
- Sulphur dioxide > 10 ppm
- Sudan Red in spice
- Aflatoxin in Peanut butter
- Fortified Maize meal
Colourant in snacks (‘maize snacks’)

>2000 mg/kg

(Allowed 200 mg/kg)
- Horse in Boerewors
- Chicken in Boerewors
COMPLIANCE

- regulations
- standards
- rules
- control
- strategy
- practices
- policy
- governance
- laws
- security
Preservatives

Country of Origin

Incorrect Nutritional Information

Nutritional Information – Databases vs Analysis

Incorrect order of Ingredients

Flavouring

Natural / Original

Intentional / Unintentional

SUNDAY TIMES THE POWER REPORT BY MEGAN POWER, 2016-08-21
• “QUID”

• Comminuted chicken
• The total brine injection allowed for whole carcasses is limited to maximum 10% (versus the maximum of 8% that was previously prescribed).
• Total brine injection allowed for individual portions is limited to maximum 15% (no limit was previously prescribed).
• The product name shall include a true description of the added formulated solution. [e.g. ‘chicken with brine based mixture’, ‘sweet ‘n sour marinated chicken drumsticks’, etc.]
Prohibited information | Declarations | Pictorial statements on label
<table>
<thead>
<tr>
<th>Product</th>
<th>Number of prohibited information / declarations / pictorial statements on label</th>
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<td>ULTRA Original</td>
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<tr>
<td>THRIVE Vanilla Flavour</td>
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</tr>
<tr>
<td>FUTURELIFE® ZERO SMART+FOOD Original</td>
<td>15</td>
<td>CAM</td>
</tr>
<tr>
<td>FUTURELIFE® SMART+FOOD Original</td>
<td>11</td>
<td>CAM</td>
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<tr>
<td>ProNutro Original</td>
<td>3</td>
<td></td>
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<tr>
<td>Kellogs All-Bran Instant Porridge</td>
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<tr>
<td>Jungle Taystee Wheat</td>
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<tr>
<td>Nestle Milo Energy Cereal</td>
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<tr>
<td>BarOne Chocolate and Caramel Flavoured Cereal</td>
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<tr>
<td>Coco Pops Chocolate Flavoured Rice Grain Cereal</td>
<td>1</td>
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<tr>
<td>Choc Shells Chocolate Flavoured Cereal Shells</td>
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<tr>
<td>Crunchalots Jungle Oat Crispies Honey Flavoured</td>
<td>2</td>
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<tr>
<td>Product</td>
<td>Number of prohibited information / declarations / pictorial statements on label</td>
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<tr>
<td>----------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Otees Multigrain Toasted Cereal Original Flavour</td>
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<tr>
<td>Special K Classic</td>
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<tr>
<td>Nestle Fitness Whole Grain Cereal Flakes Fruit</td>
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<td>Kellogs All-Bran Flakes</td>
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<tr>
<td>Bokomo Right start Bran Flakes</td>
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<tr>
<td>Nutrific</td>
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<tr>
<td>Kellogs Corn Flakes</td>
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<tr>
<td>FUTURELIFE® SMART+ FIBRE  2 in1</td>
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<tr>
<td>FUTURELIFE® CRUNCH SMART+ FOOD</td>
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<tr>
<td>Herbex Slimmers Cereal Vanilla &amp; Cinnamon flavour</td>
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</tr>
<tr>
<td>Bokomo Weet-Bix</td>
<td>2</td>
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# ULTRA 2015 VS ULTRA 2017

<table>
<thead>
<tr>
<th>ULTRA Original 2015</th>
<th>ULTRA Original 2017</th>
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</thead>
<tbody>
<tr>
<td>16</td>
<td>9</td>
</tr>
</tbody>
</table>

- “... for lasting performance”
- “Recover & Rebuild”
- “Heart Wellness”
- “Mental Stamina”

- “... for lasting performance”
- “Recover & Rebuild”
- “Long-lasting Energy”
- “High in 11 Vitamins and Minerals for a power day”
The broken window theory stems from an article written in 1982 by criminologists James Q. Wilson and George Kelling.

Their theory states that signs of disorder will lead to more disorder. A building with a broken window that has been left unrepaired will give the appearance that no one cares and no one is in charge.

... negative social actions encourage others to act inappropriately, even on an escalating level. The obvious message is that thorough enforcement of social norms and laws may be of use to hinder inappropriate behaviour by the public.

https://www.nasw.org/users/mslong/2008/12_SpreadOfDisorder.htm
... a sense of neglect will pervade the area, which will in turn implicitly invite more crime.
‘Blurring the Lines’
Rationale for Legislation

- Protect consumers
- Level the playing field for manufacturers and retailers
- Detox tea
- Herbex Slimmer’s cereal
CONCLUSIONS

- Complexity of chain
- Awareness, horizon scanning

CONCLUSIONS II

Challenges

- Resources, resources, resources!
- Policing?
  - DoH, DAFF, DTI, MCC
- Enforcement?
- Too Big to Fail?
- Naming/recalls?
