



DEPARTMENT OF AGRICULTURE  
BUREAU OF ANIMAL INDUSTRY

# **Food Safety Aspects of Regulations for Genetically Engineered/ Modified (GM) Animals**

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# Outline

- Definitions
- Roles and Responsibilities
- Food Safety Issues on GM Animals in the Philippines
- Assessment of the Concern
- Current Events
- Challenges

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# Food Safety

refers to the assurance that food will not cause harm to the consumer when it is prepared or eaten according to its intended use  
**(Republic Act No. 10611 “Food Safety Act of 2013”)**

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# Food Safety

implies absence or acceptable and safe levels of contaminants, adulterants, naturally occurring toxins or any other substance that may make food injurious to health on an acute or chronic basis **(FAO, 1999)**

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# Roles and Responsibilities

The State shall maintain a farm to fork food safety regulatory system that ensures a high level of food safety, promotes fair trade and advances the global competitiveness of Philippine foods and Food products - **Section 2 Article 1 of the Food Safety Act of 2013.**

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# Roles and Responsibilities

The Department of Agriculture (DA) shall be responsible for food safety in the primary production and post-harvest stages of food supply chain and foods locally- produced or imported - **Section 15 (a) Article V of the Food Safety Act of 2013.**

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# Roles and Responsibilities

The Bureau of Animal Industry, as one of **Food Safety Regulatory Agencies (FSRAs)** under DA, shall be responsible for development and enforcement food safety standards and regulations in the primary production and postharvest stages of food derived from animals.

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# Food Safety Issues in the Philippines

1. Chemical contamination (Pesticide residues)
2. Heavy Metals (Lead)
3. Aflatoxin
4. Histamines
- 5. Allergens/Toxins**
6. Red Tide
7. Physical Contamination in Processed Food
8. Microbiological Contamination
9. Food-borne zoonotic diseases
10. Sanitation and Hygiene

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# Allergens/Toxins

- is a substance (a protein or glycoprotein) that causes an allergic reaction or adverse reactions which can elicit a heightened response of the immune system
- major concern on Genetically Engineered/Modified (GE/GM) Animals since it will involve the expression of new/novel proteins

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## Assessment of the concern

- Comparative safety assessment (principle of substantial equivalence)

The principle for assessing the safety of food from genetically engineered animals is **qualitatively the same** as for non-engineered animals, which is basically evaluated for the presence of agents, chemical or biologic, which may affect the safety of the food for the human consumer.

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# Assessment of the concern

- Hazard Identification and Characterization

Shall cover potential allergenicity of the newly introduced proteins which will require understanding:

- source of the transferred protein
- level of expression
- physical and chemical properties of the protein
- any structural similarities to known allergens.

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# Assessment of the concern

- Nutritional analysis

Shall focus on the potential replacement of nutritionally important food products by the novel GM animal-derived food products with possibly altered characteristics

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## Current events on GE/GM Animals

- There are currently **74 transgenic animals** with potential commercial applications (excluding mice and rats), **half are designed for use as livestock**. Majority are intended for direct release onto the **food market** (as meat or meat product) (Lievens, 2015).
- **GM Salmon (AquaAdvantage®salmon)** has already been approved for food use and is being brought into production in **Panama, Canada, and USA**.

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## In the Philippines...

- Currently, **there are no food derived from GE/GM Animals** available in the market.
- Regulatory Policy for GM Animals is still underway
  - Special Order No. 582 Creation of IA-TWG for GM Animals
  - Joint Department Circular - Draft

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# Joint Department Circular for GM Animals and its Products

- Joint effort of **DA, DOH, DOST, CLSU, BCP, PCLAM, DENR**
- Timeline of Events:
  - July 10, 2020 - Orientation meeting with IA-TWG
  - August 17, 2020 - SO No. 582 was signed
  - August 24-26, 2020 - ISAAA Webinar (Training-Workshop on GM Animals for Philippine Regulators)

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# Joint Department Circular for GM Animals and its Products

- Major points discussed during ISAAA Webinar:
  - Terminologies
  - Regulatory approach
  - Gaps and needs
  - Current capacities of agencies involved
  - Interim measures

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# Challenges

- Assessment the potential allergenicity of transferred proteins
- Establishment of equivalence with conventional control
- Detection and identification of GM materials (be it plant, animal or microbial) in food and feed samples

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# Challenges

- Incorporation of novel techniques into the routine testing workflow (PCR, Next Generation Sequencing)
- Post-Marketing surveillance and Traceability

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# Conclusion

Individual food derived from Genetically Modified Animals and their safety should be assessed on a **case-by-case basis** and it is not possible to make general statements on the safety of all food derived from GM Animals.

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# Thank you.

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