safe
Safe Food Advocacy Europe

Protecting Children and Adolescents from Misleading Marketing and Unlabelled New Genomic Techniques in Food

POSITION PAPER

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Introduction

Recent decades witnessed rapid advancements in New Genomic Techniques (NGTs), particularly in the field of genetic improvement. Among these, CRISPR-based technologies emerged as powerful tools, significantly reducing the time required for genetic selection and enhancing precision with which specific genes can be targeted in both plants and animals. However, it is precisely the speed and efficiency of these techniques that pose significant challenges for risk assessment by major international food safety authorities.

In response, the European Food Safety Authority (EFSA) has proposed six criteria for the risk evaluation of plants developed through targeted mutagenesis, cisgenesis, and intragenesis, as outlined in its document *"Criteria for risk assessment of plants produced by targeted mutagenesis, cisgenesis and intragenesis"*[1]. Yet there remains a substantial lack of data on the potential effects of these techniques, which limits the reliability of current risk assessments. The potential impact on adolescents and children could be particularly significant, as they are among the primary consumers of food products that may contain such substances.

To date, European legislation regulates plants improved through NGTs under Regulation (EC) No 1830/2003[2], and authorises their marketing and presence in food products under the classification of Genetically Modified Organisms (GMOs) when their concentration exceeds 0.9% of the respective ingredient. As a result, consumers, even if only partially informed, are nonetheless able to make conscious and informed decisions about whether to consume such products.

In this context, and with reference to NGTs as defined under the European Commission's recently proposed regulation[3], this position paper highlights the potential impacts these techniques could have if the regulation is approved in its current form. It sets out urgent recommendations for how the use and communication about NGTs, and novel foods should be regulated, with particular attention to those targeting children and adolescent groups that are especially vulnerable and whose long-term health and wellbeing require stronger protection.

Problem Statement

Across Europe, children and adolescents could be increasingly exposed to food products that may contain ingredients derived from NGTs. Even though they are currently regulated as GMOs and should be labelled, there are no official methods to detect them. This means that

[1] EFSA Criteria for risk assessment of plants produced by targeted mutagenesis, cisgenesis and intragenesis (2022). Link.

[2] Regulation (EC) No 1830/2003 of the European Parliament and of the Council concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC. Link.

[3] Proposal for a regulation of the European Parliament and of the Council on plants obtained by certain new genomic techniques and their food and feed and amending Regulation (EU) 2017/625. (2023)Link.

products made with NGTs can enter the food chain above the limit set by Regulation (EC) No 1830/2003 without being identified, which could pose a risk to consumers and lack of transparency.

Many ingredients commonly used in foods targeted at children and adolescents (e.g., soy, corn, and wheat) are potentially derived from NGT-modified plants, particularly in the case of ultra-processed foods. This is worsened by increasingly aggressive marketing campaigns that present these products as fun, healthy, or sustainable, while hiding their high content of salt, sugar, and saturated fat (see SAFE's report [4]). This combination of hidden ingredients and persuasive advertising creates an uneven playing field for consumers and erodes trust in the EU food system.

The lack of transparency hinders families from making informed food choices.

In this non-transparent regulatory environment, consumers face higher risks of being misled, if the EU does not correct this imbalance and ensure that the youngest and most impressionable members of our society are given the clarity and protection they deserve.

NGT Deregulation and Marketing Challenges for Transparency and Consumer Choice

NGTs, including CRISPR/Cas and other gene-editing tools, remain legally classified as GMOs under EU law following the 2018 European Court of Justice ruling[5]. However, the European Commission's 2023 legislative proposal seeks to deregulate many NGT-derived crops, particularly Category 1 NGTs, removing critical requirements for risk assessment, traceability, and labelling[6–7]. The Commission claims that these crops are equivalent to conventionally bred varieties, dismissing the need for labelling and safety testing. Yet this approach has drawn significant opposition from the European Parliament, national health agencies such as the French Agency for Food, Environmental and Occupational Health & Safety (ANSES), independent scientists, and consumer organisations[8–9–10]. The suspension of trilogue

[4] Safe Food Avocacy Europe, Report-HFSS Marketing targeting children. Link.
[5] Confédération Paysanne Case (C-528/16): Legal Perspective on the GMO Judgment of the European Court of Justice. Case C-528/16.
[6] Commission Proposal for a Regulation COM (2023) 411 Final of the European Parliament and of the Council of 5 July 2023 on Plants Obtained by Certain New Genomic Techniques and Their Food and Feed and Amending Regulation (EU) 2017/625.
[7] European Food Safety Authority (EFSA). Scientific opinion on the ANSES analysis of Annex I of the EC proposal COM (2023).
[8]Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail (ANSES). ANSES Opinion on the Scientific Analysis of Annex I of the European Commission's Proposal for a Regulation of 5 July 2023 on New Genomic Techniques (NGTs) – Review of the Proposed Equivalence Criteria for Defining Category 1 NGT Plants (2023). Available Link
[9] Eckerstorfer, M. F. et al. Biosafety of Genome Editing Applications in Plant Breeding: Considerations for a Focused Case-Specific Risk Assessment in the EU. BioTech 10, (2021).
[10] SAFE Food Advocacy Europe. NGTs, MEPs vote in favour of mandatory labelling. NGTs, MEPs vote in favour of mandatory labelling. Available Link.

negotiations in June 2025, due to unresolved debates on labelling and sustainability, underscores the controversy of this policy shift[11].

Due to the difficulty in detecting NGT modifications in final food products, these ingredients often enter the supply chain unnoticed. The absence of detection methods has enabled a regulatory vacuum, where food products derived from NGTs evade both oversight and consumer awareness. This situation, together with the absence of mandatory assessments of human and environmental exposure to NGTs greatly increases the risk of hidden exposure.

This is especially problematic for certified supply chains, such as organic production, Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) products, as well as private schemes like GlobalG.A.P.

Organic farming systems, which prohibit the use of NGTs (and GMOs), currently lack the tools to detect and prevent contamination. Despite rules designed to ensure the coexistence of NGT crops and organic crops will continue to apply once the new regulation on NGTs is adopted, there is still a genuine concern that unintentional cross-contamination could occur. NGT crops can already grow alongside organic crops in many non-EU countries from which we import ingredients. The lack of validated testing methods currently makes it impossible to verify the absence of such plants in organic foods.

The current loophole, where ingredients are exempt from labelling if no modification is detectable, prevents consumers from making informed choices and disincentivises transparency among producers[12].

[11] European Parliament. Plants obtained by certain new genomic techniques and their food and feed Amendments adopted by the European Parliament on 7 February 2024 on the proposal for a regulation of the European Parliament and of the Council on plants obtained by certain new genomic techniques and their food and feed and amending Regulation (EU) 2017/625

[12] ENGA (European Non-GMO Industry Association) (2023). Deregulation of New Genomic Techniques – what is at risk? ENGA. Link.

Organic Farming

A critical concern arising from the deregulation of NGT plants relates to their potential impact on the integrity of organic farming systems. Under the current EU Regulation (EU) 2018/848 on organic production, the use of GMOs and products derived from or by GMOs is strictly prohibited in both cultivation and food processing. However, Category 1 NGTs, as defined in the Commission's proposal, are considered equivalent to conventionally bred plants and are therefore exempt from risk assessment, traceability, and labelling requirements. Because these modifications are technically undetectable in the final product, there is no reliable analytical method to distinguish Category 1 NGT plants from conventional varieties.

This regulatory gap creates a significant risk for the organic sector. Undetectable NGT-derived material could enter organic supply chains unintentionally, undermining the strict prohibition of GMOs in organic production and eroding consumer trust in the organic label. The absence of enforceable detection tools means that organic farmers and certifiers would be unable to guarantee compliance, potentially compromising both market credibility and consumer confidence in organic products.

Import Risks of NGT Products in the Coming Years

According to the European Parliamentary Research Service, the regulatory approach to genome-edited organisms is not the same across the globe. As an example, countries like Brazil, Chile, Paraguay, and Uruguay follow the Argentinian example, where crops with alterations that could also occur spontaneously or result from conventional breeding are not subjected to the GMO legislation. In the United States (US), it is no longer required to deregulate certain genome-edited crops under the Plant Pest Act. Similarly, in Japan and Australia, genome-edited organisms with small genetic changes (cf. SDN-1) are not subject to the GMO legislation. Finally, in the United Kingdom (UK), regulations exclude certain organisms (plants, including algae) created by genetic technologies in ways which could have occurred naturally or produced by traditional breeding[13]. Differences in regulatory oversight have consequences for international trade. If certain genome-edited crops are not regulated in parts of the world, then it may be difficult to prevent them from ending up in other parts of the world unnoticed.

The definition of NGTs does not exist in non-European countries. These techniques are commonly referred to as genome editing and classified among those that produce GMOs, according to Directive 2001/18/CE[14] and the World Health Organisation (WHO) document[15] "Food, genetically modified".

[13] European Parliamentary Research Service. (2022) New Genomic Techniques: status and regulatory options (Report). European Parliament. Link.

[14] Directive 2001/18/EC of the European Parliament and of the Council of 12 March 2001 on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC - Commission Declaration. Link.

[15] World Health Organization Food, genetically modified (2014) Questions and answers. Link.

The main non-EU countries that cultivate genome-edited plants are the US, Brazil, Argentina, and Canada, all of which export significant quantities of food products to the European Union. The table below provides an overview of the extent of land cultivated with GMOs in these countries.

Table: GMO Cultivation by Country

Country	Total Cultivated Area *(million hectares)*	Area Cultivated with GMOs *(million hectares)*	% of Area Cultivated with GMOs
United States	400	71.5 – 75.4	18%
Argentina	40	23.8	59.5%
Canada	25	10 – 12	40%
Brazil	65	52.8	81.2%
Globally	**1,500**	**190**	**12.7%**

The countries with the largest share of land cultivated with GMOs are Brazil (81%) and Argentina (59%), both of which are members of Mercosur and part of the new trade agreement that has recently entered into force. According to some analyses by EU Commission[16] and EU Farmers Organization[17], agricultural exports from **Mercosur** to the EU could increase by 25–30% over the next 10 years, with a projected annual value increase of up to €4.5 billion by 2030. In particular, the EU imports soybeans primarily for animal feed, but also for use in plant-based products, whose consumption is steadily growing across the EU. In 2020, the volume of soybean imports reached approximately 13 million tonnes. With the agreement in place, soybean exports from Mercosur could rise by an estimated 1–2 million tonnes. It is important to note that a significant share of soybeans originating from **Mercosur**, especially from Brazil and Argentina, are genetically modified. The EU remains one of the main markets for GMO soy used in animal feed and food. The **Mercosur** agreement will therefore facilitate the import of these GMO and NGT products, increasing the overall risk of exposure.

NGTs and GMOs in processed foods

According to the FAO *GM Foods Platform*[18], maize is the most cultivated genome-edited crop, followed by soybeans, cotton, and potatoes, mainly modified for glyphosate resistance and yield gains, and widely used in processed foods. For instance, maize is used in the manufacture of cereals, snacks, sweeteners, as well as in soft drinks and other baked goods.

[16] https://policy.trade.ec.europa.eu/analysis-and-assessment/sustainability-impact-assessments_en
[17] https://copa-cogeca.eu/Flexpage/DownloadFile/?id=13538201
[18] Food and Agriculture Organization of the United Nations. (2025). Regulatory framework on GM food safety assessment [GM Foods Platform]. FAO. Link

Soybeans are processed into veggie burgers, baking mixes, tortillas, granola bars, tofu, and emulsifiers (soy lecithin), which are prevalent in packaged foods. Additionally, cotton is processed in cotton seed oil, which is commonly used for frying or in packaged foods. Surely everyone is familiar with at least two or three of the processed foods mentioned, highlighting how these foods are a daily presence in our everyday life[19].

Other genetically modified crops include sugar beets, canola, alfalfa, apples, potatoes, and papaya: sugar beets are primarily used to produce granulated sugar, which is a key ingredient in sweets, candies, baked goods, and soft drinks. Canola is widely used in packaged foods through canola oil, commonly found in salad dressings, fried snacks, and processed meals. Alfalfa, while not consumed directly by humans, is fed to livestock, making its way into the human diet indirectly through meat and dairy products such as processed meats and dairy-based foods. Papaya is mostly sold as fresh fruit but can also appear in packaged fruit snacks and juices. Apples from genetically modified varieties are often found in packaged apple slices, fruit cups, and snack packs, while genetically modified potatoes are used in products like potato chips, French fries, and other frozen potato items.

[19] Analele Universităţii din Craiova, seria Agricultură, Genome-edited foods available on the market vol. 54/1/2024

Table 1

GMO Crop	***Main traits***	***Ultra-Processed Food***
Corn	Pest resistance, Herbicide tolerance	Cereals, snacks, sweeteners, sodas, baked goods
Soybean	Herbicide tolerance, Insect resistance, drought tolerance	Veggie burgers, baking mixes, tortillas, granola bars, tofu, emulsifiers (soy lecithin) in packaged foods
Sugar beets	Herbicide resistance	Granulated sugar used in sweets, candies, baked goods, soft drinks
Canola	Herbicide resistance	Packaged food with canola oil (dressings, fried snack, processed meals)
AlfaAlfa	Herbicide resistance	Indirect: meat and dairy from animals fed GMO, so processed meats and diary-based products
Papaya	Virus resistance	Mostly fresh fruit, sometimes in packaged fruit snacks and juices
Summer squash	Virus resistance	Mostly fresh produced
Apples	Non-browning trait	Packaged apple slice chips, fruit cups and snack packs
Potatoes	Pest resistance, Bruise brown resistance, lower acrylamide	Potato chips, French fries, frozen potato products

These products often come in colourful packaging, feature cartoons, are sponsored by social media influencers, or are presented through games and apps[20–21–22–23]. While these strategies may seem playful, they are designed to leverage how children think and feel, making these foods seem "smart", "natural", or "eco-friendly", without clearly explaining how they were actually made.

As already mentioned, the lack of validated testing methods is a major concern for the introduction of NGTs into the European market. Ongoing research projects, such as the Horizon Europe *DARWIN* initiative[24], are currently developing molecular tools and

[20] Tatlow-Golden, M. & Garde, A. Digital food marketing to children: Exploitation, surveillance and rights violations. Global Food Security 27, 100423 (2020).
[21] SAFE Food Advocacy Europe. HFSS Food Marketing Targeting Children. Available Link (2025).
[22] World Health Organization (WHO). Tackling Food Marketing to Children in a Digital World: Trans-Disciplinary Perspectives. Children's Rights, Evidence of Impact, Methodological Challenges, Regulatory Options and Policy Implications for the WHO European Region. Available Link (2021).
[23] United Nations Children's Fund (UNICEF). A Child Rights-Based Approach to Food Marketing: A Guide for Policy Makers. Geneva: United Nations Children's Fund. Available Link (2018).
[24] Darwin, Funded by the European Union Link.

bioinformatic approaches aimed at improving the identification of NGT-derived products, but these methods are not yet available for routine regulatory control.

Impact on Children and Adolescents

Despite their novelty, if the commission legislative proposal remains in its current form, many NGT-derived products will enter traditional product lines without any control. This regulatory ambiguity hinders proper risk assessment, particularly for sensitive population groups such as children. Children and adolescents' bodies and brains are still developing, and they are more easily influenced by what they see and hear, especially when it comes to food marketing.

The WHO has found that exposure to persuasive marketing can strongly shape children's food choices, eating habits, and even their long-term health[25]. Moreover, these marketing tactics are increasingly moving into digital spaces, like social media and gaming platforms, where regulations are weaker and harder to enforce. Under the United Nations Convention on the Rights of the Child, young people have the right to be protected from exploitation and to enjoy the highest attainable standard of health. The way some of these new food products are marketed could be violating some of those rights[26].

While preliminary evidence may suggest safety for some novel proteins or gene-edited plants, there is an alarming lack of long-term data, especially in paediatric populations. Possible health effects, including allergenicity, metabolic changes, or microbiome disruption, are insufficiently studied. Applying the precautionary principle is not just advisable, it is essential, making it necessary to adopt effective impact-mitigation measures

Epigenetic and Environment: Health and Safety Gaps

When discussing the safety of NGTs, it is worth adopting a broad definition of 'environment', one that extends beyond agricultural ecosystems to include the human body as an internal environment that constantly interacts with dietary components. Within this framework, epigenetics becomes particularly relevant: it is the branch of biology that studies how gene activity can be regulated without altering the underlying DNA sequence. In simple terms, our DNA contains all the genetic instructions, but epigenetic mechanisms determine which genes are turned on or off, and when and where they are active. These mechanisms include chemical modifications to DNA (such as methylation) or to the proteins around which DNA is wrapped (histone modifications), as well as the action of certain RNA molecules. Environmental factors, such as nutrition, stress, exposure to toxins, or lifestyle, can influence these epigenetic marks, leading to long-lasting effects on how genes function.

Despite the rapid development of genome-edited crops, especially those categorised (according to the new regulation proposal) as NGT-1, there is a lack of research into how their

[25] World Health Organization (WHO). Policies to Protect Children from the Harmful Impact of Food Marketing: WHO Guideline. Available Link.
[26] UN Human Rights Office OHCHR. Convention on the Rights of the Child.

consumption might affect human intestinal homeostasis and the gut microbiota. NGT-1 edits usually make only a few small changes to the DNA, but even these modifications can potentially alter how a plant's metabolism works, which may affect the production of important natural substances or its level of allergens. These changes could, in turn, affect the activity of the gut's microbial communities, or alter how the body and its microbes interact. Given the growing evidence linking dietary factors to microbiome-mediated epigenetic regulation, this knowledge gap resents a significant blind spot in current safety assessments[27].

An additional concern is that NGT-1 products are, by definition, practically indistinguishable from conventionally bred crops at the molecular level. This lack of detectability and traceability poses challenges not only for regulatory oversight but also for scientific investigation, since potential adverse outcomes could circulate in the food system without being attributable to their source. For these reasons it is premature to assume that genome-edited crops are inherently safe, and a more precautionary approach, supported by systematic studies, robust monitoring tools, and transparent data, is needed before their widespread adoption.

Unfortunately, this is not the approach that has been taken in the EU, with all the potential consequences this may have in the future for the health of its citizens.

Ethical and Legal Concerns

The European Commission's proposed deregulation of NGTs challenges several cornerstone principles of EU law and international human rights commitments. These include:

- The right to informed consumer choice, enshrined in EU treaties and foundational to fair market practices.
- The right to health and protection from exploitation, as defined by the United Nations Convention on the Rights of the Child.

Allowing patents on NGT-derived traits exacerbates concerns over monopolisation and seed sovereignty, favouring large agribusinesses over local farmers and threatening biodiversity. Additionally, exempting these products from traceability and labelling frameworks undermines the integrity of organic agriculture, which is explicitly prohibited from using genetically modified organisms.

Policy Recommendations

To address these concerns and restore consumer trust, SAFE recommends the following measures:

[27] American Academy of Pediatrics, Use of Genetically Modified Organism (GMO)-Containing Food Products in Children, *Pediatrics* (2024). Link

1. Development of Reliable Traceability and Detection Methods
   Given that one of the major challenges with NGTs is the current lack of official analytical methods to detect and trace them, SAFE calls for the European Commission and EFSA to prioritise scientific research into the development of robust, standardised detection techniques for NGT 1 and NGT 2 plants and ingredients. Establishing these tools is essential for ensuring transparency, enabling effective market controls, and protecting both consumers and organic producers. Until such methods are validated, risk assessments and regulatory decisions should explicitly account for this analytical gap.

2. Mandatory Labelling and Full Supply Chain Traceability
   Once traceability mechanisms are in place, all food products derived from NGT 1 and NGT 2 must include clear front-of-pack labelling. Traceability must extend throughout the entire food chain, including animal feed, and be maintained even where analytical verification remains limited. Supplementary tools such as digital databases should be adopted to provide consumers and authorities with additional transparency.

3. Regulation of Misleading Marketing
   Strict limits must be imposed on the use of cartoons, influencers, and gamified content to market NGT or other novel food products to minors, both online and offline. These restrictions should align with existing EU bans on marketing high-fat, salt, and sugar (HFSS) foods to children.

4. Protection Against Patent-Driven Monopolies
   SAFE calls for a moratorium on patents covering NGT-derived plant traits to safeguard biodiversity, support independent farmers, and prevent excessive market concentration and dependency on a few biotechnology firms.

5. Education and Awareness Campaigns
   SAFE urges the European Commission to support publicly funded campaigns informing consumers about NGT 1 and NGT 2. These initiatives should target parents, educators, and youth through schools, healthcare institutions, and media channels, ensuring accessible and evidence-based information.

6. Revised Risk Assessment Criteria
   The European Food Safety Authority (EFSA) should update its approval procedures to include specific health risk assessments for children and adolescents, who may respond differently to novel ingredients. EFSA's framework should also evaluate potential effects on the human microbiome and account for the absence of analytical detection methods.

7. Coexistence and Market Controls
   SAFE calls on Member States to immediately adopt coexistence measures between organic and NGT 1/2 crops, guided by detailed instructions from the European Commission to prevent contamination. Furthermore, mandatory market controls for the presence of NGT 1 and 2 should be introduced as a mitigation measure to ensure compliance and consumer safety.

8. Safe School Food and Responsible Communication
   Until full traceability and safety mechanisms are established, unlabelled or untraceable NGT/novel ingredients should be excluded from school meal programmes and child nutrition schemes. When safety and traceability are guaranteed, information provided to families, schools, and children must be age-appropriate, evidence-based, and free of exaggeration. Claims regarding health benefits must be independently verified.

Conclusion

The risk that adolescents and children may be unintentionally exposed to foods containing GMOs produced through CRISPR techniques could increase significantly in the coming years.

The definition of improved plants (NGT1 and NGT2) provided in the proposed EU regulation does not appear in any other national or international legislation.

According to data from the European Commission and European agricultural producers, the import of GMO, and therefore NGT, products could rise considerably with the implementation of the new Mercosur trade agreement.

The absence of mandatory labelling for NGTs, as foreseen in the upcoming European regulation, reduces the level of attention required to monitor the release of these novel foods into the environment and onto the market. Moreover, the lack of market surveillance as a mitigation measure increases the risk of failing to prevent potential adverse effects.

Organic farming, a key pillar of the EU's sustainability policy, could be contaminated by NGT crops, potentially leading to a sharp decline in consumer trust, which may disappear entirely within a few years.

The increasing presence of novel foods and NGT-derived products in the EU food system presents a complex matter of ethical, scientific, and legal concerns. When these products target or reach vulnerable populations (especially children and adolescents) the risk become even higher. SAFE urges EU policymakers to act decisively to promote transparency, uphold public trust, and prioritise the health and rights of its youngest citizens.

About SAFE

SAFE – Safe Food Advocacy Europe is a non-profit and independent organisation based in Brussels whose primary objective is to ensure that consumers' health and concerns remain at the core of the European Union's food legislation. SAFE's mission is to improve the representation of ordinary citizen in the EU debate concerning the future of EU food regulation. Our members include consumer groups, food health organisations, vegan and vegetarian associations, as well as independent scientists, doctors, and nutritionists across Europe. Collectively, we represent the voice of over one million European consumers.

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