

## RESPONSES TO COMMENTS RECEIVED FROM THE PUBLIC CONSULTATION ON REGULATION OF INSECT AND INSECT PRODUCTS (IMPORTS AND LOCALLY FARMED/PROCESSED)

In recent years, the commercial farming of insects for human consumption and livestock feed has been promoted by the Food and Agriculture Organisation (FAO) and has received commercial interest. The Singapore Food Agency (SFA) keeps abreast of such developments in food production and innovations and has received industry queries on the import of insects as food or livestock feed.

To safeguard food safety, SFA has initiated a public consultation from 5 Oct 2022 to 4 Dec 2022 on the regulation of insects and insect products (imports and locally farmed/processed), which is targeted to come into effect in the 2<sup>nd</sup> half of 2023.

At the close of the public consultation exercise, SFA received 53 responses. SFA's responses to the matters raised by respondents are tabulated in **Table A** as appended.

SFA appreciates the time taken by stakeholders to submit feedback and comments which would contribute to the decision-making process. Following this consultation, SFA has reviewed the proposed regulatory amendments, taking into consideration the comments received.

**ANNEX – RESPONSES TO SFA’S “CONSULTATION ON REGULATION OF INSECT AND INSECT PRODUCTS (IMPORTS AND LOCALLY FARMED/PROCESSED)”**

**Table A: Response to comments provided by stakeholders (industry and public)**

SN	Comments from stakeholders on the regulation of insects and insect products	SFA’s response
<p>Respondents from industry were highly supportive of the regulatory changes overall. There were suggested changes, as well as clarifications on details on the insect regulatory framework.</p>		
<p><b>(I) Suggestion by Respondents</b></p>		
(A)	<p><u>Feeding Substrates</u></p> <ul style="list-style-type: none"> <li>i. To review the restriction of materials of ruminant origin in insect substrate. The respondent suggested for the restriction to be limited to Specified Risk Materials (SRM) for Bovine Spongiform Encephalopathy (BSE), such as the brain, eye, spinal cord, skull and vertebral column from ruminant animals.</li> <li>ii. To prohibit the use of any materials from diseased animals as insect substrate to avoid the spread of animal disease.</li> </ul>	<ul style="list-style-type: none"> <li>i. SFA will amend the requirement to allow deboned meat cuts and dairy (e.g. milk and cheese) products of ruminant origin for use as feeding substrates, in view that these products of ruminant origin are low risk in terms of carrying prions (i.e. Bovine Spongiform Encephalopathy (BSE))<sup>1</sup></li> <li>ii. SFA will add a specific condition to prohibit the use of any materials from diseased animals or fish as insect substrate, to prevent the spread of diseases.</li> </ul>

<sup>1</sup> According to the World Organisation for Animal Health (WOAH) guidelines for BSE:

- a) Deboned beef cuts (from cattle of all ages) are eligible for export from countries with controlled BSE risk and undetermined BSE risk.
- b) Milk and milk products may be allowed from exporting country regardless of BSE risk.

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(B)	<p><u>List of Approved Insect Species</u></p> <p>For black soldier fly larvae (BSFL) and silkworm cocoons to be added to the list of approved insects for human consumption.</p>	<p>We will permit silkworm (<i>Bombyx mori</i>) cocoons for human consumption based on their known history for human consumption in East Asia, China and Malaysia. We will also permit fibroin from <i>Bombyx mori</i> cocoons as it is considered Generally Recognized as Safe (GRAS) by the United States Food and Drug Administration, approved as food ingredient by the Ministry of Food and Drug Safety of Korea (MFDS), approved as food in Japan under Ministry of Health, Labour and Welfare. As BSFL does not have a known history of safe human consumption, any application for it to be considered for human consumption would be evaluated under SFA's <a href="#">novel food framework</a>.</p>
(C)	<p><u>Use of Wild-Caught Insects</u></p> <p>To consider semi-farmed insects such as ants and bamboo caterpillar, which are harvested from the wild.</p> <p>There is sometimes a need to capture/import insects from the wild to maintain genetic diversity in a farmed population. To consider permitting usage of wild insects for breeding purposes.</p>	<p>i. Wild-harvested insects may potentially harbour pathogens that could cause human or animal disease. There is also no control over substrates, leading to potential contamination with environmental contaminants. These hazards are potential public health risks. As such, SFA will only consider insects farmed in a controlled environment for human consumption and animal feed.</p>

SN	Comments from stakeholders on the regulation of insects and insect products	SFA's response
		ii. Nonetheless, SFA recognizes that there may be a need to obtain insects from the wild for breeding purposes, in order to maintain genetic diversity in a farmed population. Accordingly, we have no objection to the use of wild harvested insects as a supplemental breeding stock only, and not for production as food or feed.
<b>(II) Clarification by Respondents</b>		
(A)	<p><u>Insects for Pet food and Non-food Purposes</u></p> <p>If SFA regulates insects for pet food or insects for non-food purposes, such as cosmetics and pharmaceuticals.</p>	<p>The National Parks Board (NParks) is the regulatory authority for pet food, including pet food containing insects.</p> <p>SFA is the competent authority for food safety. SFA does not regulate the use of insects in cosmetics and pharmaceuticals.</p>
(B)	<p>Classification of Insect Products/ Definition of History of Human Consumption/ of Safe Use</p> <p>i. On the classification of food products containing insect-based material.</p>	<p>i. Finished food products containing insects would be classified as insect products. Importers shall declare these as such at the point of import and select the appropriate product code in TradeNet. New product codes for insect products would be created in TradeNet.</p>

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	ii. On the definition of known history of human consumption, or history of safe use.	ii. Definition of "History of human consumption/ of safe use" is specified in SFA's Novel Food Framework, i.e. consumed as part of an ongoing diet by a significant human population for a period of at least 20 years without reported adverse human health effects.
(C)	<p><u>Rationale for Limiting Life Stages of Insects for Human Consumption</u></p> <p>On the rationale for limiting life stages of insects meant for human consumption.</p>	<p>For some insects, only certain life stage(s) are considered safe for consumption. For example, Tenebrio molitor mealworms are known to have a history of safe human consumption in countries like Korea, Australia and New Zealand. However, the adult life stage - Tenebrio molitor beetles are known to produce toxic substances which may pose a health risk to human if consumed.</p>
<b>(III) Feedback and comments on safety concerns and labelling</b>		
(A)	<p><u>Safety of Insects for consumption</u></p> <p>i. Some respondents felt insects were unsafe and unnatural to consume.</p>	<p>i. SFA has taken reference from the European Union and countries such as Australia, New Zealand, Korea and Thailand, which have allowed the consumption of certain insect species as food, as well as conducted a thorough scientific review. We have assessed that specific species of insects with a history of human consumption can be allowed for use as food or livestock feed. Hence, SFA will only allow insect species that have a known history of human consumption to be permitted as food. Those not in this list must</p>

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	<p>ii. They had concerns on “chitin”, which they feared was unsafe for consumption.</p> <p>iii. Need for labelling to ensure consumers would be aware of any insect content, especially for allergenicity concerns.</p>	<p>undergo evaluation as novel food, under the <a href="#">novel food framework</a>. This is to ensure that insects are safe to consume. In addition, insects have been part of the natural diet for many food animals such as poultry or fish.</p> <p>ii. Chitin is found in a wide variety of foods including mushrooms and crustaceans such as shrimps, crabs, and lobsters. While chitin is not allergenic, it is reported to have an impact on the immune system, which may result in allergic reactions to other allergens. As such, while chitin is safe for consumption, consumption of insects may trigger allergic reactions in persons who are sensitive to crustaceans. We understand that the notion that chitin from insects can result in health effects was widely shared in a tweet in July 2022. The misinformation in this tweet has since been debunked by <a href="#">factchecking websites</a>. Nonetheless, companies using insects as an ingredient in their products will be required to indicate the true nature of the product on the packaging, and SFA will publish risk communication materials on the allergic potential of insect consumption.</p> <p>iii. As per point ii. above, companies using insects as an ingredient in their products will be required to indicate the true nature of the product on the product packaging, so consumers are aware of food products containing insects.</p>
(B)	Insects as food	

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	Some respondents felt disgust at the thought of consuming insects.	SFA acknowledges that not everyone may accept insects as food. Consumers should make an informed decisions on what they choose to consume based on the information made available for food products containing insects.
<b>(IV) Respondents from both industry and public also expressed support</b>		
(A)	<p><u>Approach towards regulation and insect farming</u></p> <ul style="list-style-type: none"> <li>i. For insect farming, stating it is a good move for sustainability and the circular economy.</li> <li>ii. On SFA's science-based approach to ensuring safety of insects for food and feed.</li> </ul>	<p><u>Approach towards regulation and insect farming</u></p> <ul style="list-style-type: none"> <li>i. FAO (Food and Agriculture Organization) has acknowledged in their recent publication "<a href="#">Looking at Edible Insects from a Food Safety Perspective (2021)</a>" that insects are considered a sustainable source of protein. Insect farming is also viewed as an opportunity to implement circular economy solutions, with the use of food side streams/food waste as insect substrates. SFA acknowledges these benefits of insect farming while giving due consideration to food safety.</li> <li>ii. SFA would like to thank respondents who have expressed support for the proposed regulatory measures for insects and insect products. As the national authority for food safety in Singapore, SFA has in place a food safety regime based on risk and backed by science to ensure that food in Singapore is safe for consumption. SFA has taken into consideration the risks involved in consuming insects and proposed regulatory</li> </ul>

<b>SN</b>	<b>Comments from stakeholders on the regulation of insects and insect products</b>	<b>SFA's response</b>
		<p>measures to address and mitigate them. This is complemented with a surveillance regime, including inspection and sample testing, to ensure that insects produced/processed locally and imported are safe for consumption. Companies importing or producing insects for human consumption/animal feed will need to comply with food safety and labelling requirements. With the insect industry being nascent, SFA will continue to review our regulatory measures using a science-based approach when there are developments within the industry, so that they remain relevant and robust.</p>