CODEX ALIMENTARIUS COMMISSION

Food and Agriculture Organization of the United Nations

World Health Organization

Viale delle Terme di Caracalla, 00153 Rome, Italy - Tel: (+39) 06 57051 - E-mail: codex@fao.org - www.codexalimentarius.org

Agenda item 5.1 **CX/FH 24/54/5 Add.1**

February 2024

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON FOOD HYGIENE

Fifty-fourth Session

Nairobi, Kenya

11 - 15 March 2024

GUIDELINES FOR THE CONTROL OF SHIGA TOXIN-PRODUCING ESCHERICHIA COLI (STEC) IN RAW BEEF, FRESH LEAFY VEGETABLES, RAW MILK AND RAW MILK CHEESES, AND SPROUTS: PROPOSED DRAFT ANNEX II ON FRESH LEAFY VEGETABLES AT STEP 4

Comments in reply to CL 2024/21-FH

Comments of Argentina, Australia, Canada, Colombia, Ecuador, Egypt, European Union, Indonesia, Iraq, Japan, Kenya, Malaysia, New Zealand, Peru, Philippines, Thailand, United Arab Emirates, United Kingdom, Uruguay and USA

Background

1. This document compiles comments received through the Codex Online Commenting System (OCS) in response to CL 2024/21-FH issued in January 2024. Under the OCS, comments are compiled in the following order: general comments are listed first, followed by comments on specific sections.

Explanatory notes on the appendix

2. The comments submitted through the OCS are hereby attached as **Annex I** and are presented in table format.

Annex I

GENERAL COMMENTS

COMMENT	MEMBER / OBSERVER
Australia thanks Chile, New Zealand, Kenya and the United States of America for preparing paper CX/FH 24/54/5 presenting for comment a proposed draft Annex II on fresh leafy vegetables for the Guidelines for the control of shiga toxin-producing E. coli in raw beef, fresh leafy vegetables, raw milk and raw milk cheeses, and sprouts (CXG 99-2023). Response to recommendation of CX/FH 24/54/5: Australia would support advancing Annex II in the Codex Step process following the Physical Working Group (PWG) meeting. Australia considers the text close to being ready for advancement and expects this will be achieved during the PWG on 10 March 2024.	**Australia**
Ecuador agradece a la Presidencia del Grupo de Trabajo, la oportunidad de emitir comentarios en la construcción de la referida norma alimentaria; en tal virtud y una vez revisado el proyecto de norma propuesto, nos permitimos señalar que, el documento abarca la mitigación de la probabilidad de contaminación en las fases de producción primaria y cadenas de comercialización, por tanto, los documentos son completos y están apegados a la realidad productiva de la región andina y el Ecuador; sin embargo, nos permitimos sugerir se analice la factibilidad de incorporar las siguientes pruebas de análisis microbiológicos a fin de identificar patógenos y prevenir brotes de enfermedades transmitidas por alimentos: Pruebas fenotípicas y moleculares, como la qPCR (reacción en cadena de la polimerasa en tiempo real), así como la secuenciación genómica, para fortalecer la capacidad de detección y caracterización de microorganismos patógenos. Pruebas fenotípicas: para determinar las características físicas y bioquímicas de los microorganismos, así como también para la identificación de patógenos, sin embargo, a veces no son suficientemente sensibles para identificar a los organismos por lo que se complementan con pruebas moleculares. qPCR: nos ayudaría a detectar y cuantificar la presencia de material genético específico de microorganismos. Esta técnica es altamente sensible y específica, por lo que se utiliza para la detección temprana de patógenos específicos, incluso en concentraciones bajas, lo que facilita la intervención rápida para prevenir brotes. Secuenciación genómica: para identificar la presencia de un patógeno, y caracterizar su genética, incluidas las mutaciones, factores de virulencia asociados a la producción de toxinas, genes de resistencia y seguimiento de brotes. Esto es fundamental para rastrear la fuente o fuentes de contaminación de alimentos, identificar brotes potenciales y determinar estrategias de control.	**Ecuador**
Egypt approves the proposed draft Annex II on Fresh Leafy Vegetables	**Egypt**
The European Union and its Member States (EUMS) would like to thank and congratulate Chile and the United States of America with the proposed revision of the Guidelines on the draft Annex II on fresh leafy vegetables of the Guidelines for the control of Shiga toxin-producing Escherichia coli (STEC) in raw beef, fresh leafy vegetables, raw milk and raw milk cheeses, and sprouts. The EUMS generally support the draft, subject to the considerations of the comments made below and the outcome of the discussions at CCFH54. The EUMS also wonder if recommendations should not be added on hygiene conditions for pre-packaged salads. Rationale: the scope explicitly includes pre-packaged salads but no specific recommendations are made (except on labelling).	**European Union**
Agree with proposal	**Iraq**
Guidelines on control measures should be specific and effective for STEC, while ensuring flexibility in the choice of control measures, taking into account the diversity and feasibility of primary production.	**Japan**
Malaysia appreciates the work of the Electronic Working Group chaired by Chile and co-chaired by New Zealand, Kenya and the United States of America on the Guidelines for the Control of Shiga Toxin-Producing Escherichia coli (STEC) in Raw Beef, Fresh Leafy Vegetables, Raw Milk	**Malaysia**

and Raw Milk Cheeses, and Sprouts (CXG 99-2023): Proposed Draft Annex II on Fresh Leafy Vegetables. Malaysia supports the Proposed Draft Annex II on Fresh Leafy Vegetables for adoption at Step 5/8.	
The Philippines supports the proposed draft Annex 2 on Fresh Leafy Vegetables and supports its advancement in the Codex Step process.	**Philippines**
The United States as a co-Chair of the STEC EWG has had many opportunities to review and propose revisions to Annex II on Fresh Leafy Vegetables and is generally satisfied with the resulting text. The United States believes that Annex II on Fresh Leafy Vegetables could progress to Step 5/8 for final adoption by CAC47 (2024).	**USA**

SPECIFIC COMMENTS

INTRODUCTION	
Uruguay considera que debería seguirse el orden que se sigue en CXC1-1969 Rev 2022 con respecto a los títulos y sub titulos	**Uruguay**
Paragraph 1	
Fresh leafy vegetables are grown, processed, and consumed throughout the world. They are grown on ~~farms~~ on open fields and in fully or partially protected facilities of varying sizes; distributed and marketed locally and globally, providing year-round availability to consumers; and sold as fresh whole, fresh pre-cut or other ready-to-eat (RTE) products such as pre-packaged salads. It would be good to refer to the different production systems. In particular controlled environmental agriculture (CEA) is increasing all over the world.	**European Union**
Paragraph 2	
Consider if it would be useful to mention that there is evidence that STEC can internalize in fresh leafy vegetables which is part of what renders surface washing ineffective (Erickson et al. Internalization and Fate of Escherichia coli O157:H7 in Leafy Green Pyllosphere Tissue Using Various Spray Conditions. J. Food Prot. 77 (2014), pp. 713-721). This can highlight that preventing contamination events in the first place is the most effective intervention versus trying to address it post-contamination. To a much lesser degree, knowledge of internalization also may have some impact on methodology (surface wash vs whole product testing) and risk assessment (noting surface treatment is not wholly effective), so it is overall good information to have out there.	**Canada**
Los brotes de enfermedades causadas por una amplia gama de patógenos microbianos, incluida la *Escherichia coli* productora de toxina Shiga (ECTS) se han relacionado con el consumo de verduras de hoja verde frescas. Las pruebas epidemiológicas, las investigaciones sobre brotes, los estudios y las evaluaciones de riesgo han identificado varias fuentes posibles de contaminación de las hortalizas de hoja verde frescas con ECTS, entre ellas el agua, los animales domésticos y salvajes, los trabajadores y las enmiendas del suelo a base de estiércol[1]. Las hortalizas de hoja verde frescas suelen cultivarse y cosecharse en grandes volúmenes, cada vez con más frecuencia en lugares donde la cosecha y la distribución de estas hortalizas es eficiente y rápida. Las hortalizas de hoja verde frescas se envasan de diversas maneras, entre ellas, en el campo, directamente para su comercialización; en el campo, sin corazón y preparadas para su elaboración posterior, y como mezclas de hortalizas de hoja verde frescas precortadas y combinadas con otras hortalizas. Las medidas de control como los lavados antimicrobianos para reducir al mínimo la contaminación cruzada se pueden aplicar antes del envasado o antes del envío para su comercialización. También existe	**Colombia**

la posibilidad de que se introduzcan y proliferen patógenos, entre ellos la ECTS, a medida que las hortalizas de hoja verde frescas avanzan a lo largo de la cadena de suministro. El creciente uso en todo el mundo de las hortalizas de hoja verde recién cortadas y preenvasadas para ampliar la cadena de suministro podría aumentar la posibilidad de la presencia en el mercado de productos contaminados por contaminación cruzada con ECTS y la replicación de esta última durante la distribución y el almacenamiento si las hortalizas de hoja verde frescas no se manipulan correctamente. No existe ningún tratamiento de elaboración para las hortalizas de hoja verde frescas que elimine o inactive la ECTS, si bien se puede reducir la contaminación con medidas y tratamientos como el lavado con agua que contenga biocidas. Los ejemplos de medidas de control en el campo que se proporcionan en el presente documento son solamente ilustrativos, y su uso y aprobación por las autoridades sanitarias podría variar entre los países miembros. It is important to underline that food safety authorities are the competent bodies do define this use.	
Outbreaks of illness caused by a broad range of microbial pathogens, including Shiga toxin-producing *Escherichia coli* (STEC), have been linked to the consumption of fresh leafy vegetables. Epidemiological evidence, outbreak investigations, research, and risk assessments have identified several possible contamination sources of fresh leafy vegetables with STEC, including water, domestic and wild animals, workers, and manure-based soil amendments[1]. Fresh leafy vegetables are typically grown and harvested in large volumes, increasingly in locations where harvest and distribution of fresh leafy vegetables is efficient and rapid. The increasing production under controlled environmental agriculture allows year-round production regardless of external weather conditions. Fresh leafy vegetables are packed in diverse ways, including field packed direct for market; field cored and prepared for later processing; and as pre-cut fresh leafy vegetable mixtures and blends with other vegetables. Control measures such as antimicrobial ~~washes~~ treatments to minimize cross-contamination may be applied prior to packaging and/or shipment to market. As fresh leafy vegetables move through the supply chain, there is also the potential for the introduction and growth of pathogens, including STEC. The increasing worldwide use of pre-packaged fresh-cut leafy vegetables to expand the supply chain might increase the potential for the presence of contaminated product in the marketplace through cross-contamination with STEC, and STEC replication during processing, distribution and storage if fresh-cut leafy vegetables are improperly handled. There is no processing treatment applied to fresh leafy vegetables that would eliminate or inactivate STEC, although contamination can be reduced by measures and treatments such as washing in water possibly containing biocides. Examples of field level control measures provided in this document are illustrative only and their use and approval may vary by country. Rationale added sentence: Changing reality is relevant for this guidance document. Rationale fifth sentence: the EUMS would like to avoid the “wash” because then we are saying that the washing is to decontaminate. The term “treatment” is more general, including some antimicrobial treatments such as bacteriophages or protective cultures. Rationale sixth sentence: cross-contamination is also possible during processing (e.g. conveyor belt, washing, etc). Rationale seventh sentence: In many cases, washing with water have the same effect as water with a residual concentration of disinfectant.	**European Union**
Outbreaks of illness caused by a broad range of microbial pathogens, including Shiga toxin-producing *Escherichia coli* (STEC), have been linked to the consumption of fresh leafy vegetables. Epidemiological evidence, outbreak investigations, research, and risk assessments have identified several possible contamination sources of fresh leafy vegetables with STEC, including water, domestic and wild animals, workers, and manure-based soil amendments[1]. Fresh leafy vegetables are typically grown and harvested in large volumes, increasingly in locations where harvest and distribution of fresh leafy vegetables is efficient and rapid. Fresh leafy vegetables are packed in diverse ways, ~~**including field packed direct for market**~~ **including field packed for direct transport to market**; field cored and prepared for later processing; and as pre-cut fresh leafy vegetable mixtures and blends with other vegetables. Control measures such as antimicrobial washes to minimize cross-contamination may be applied prior to packaging and/or shipment to market. As fresh leafy vegetables move through the supply chain, there is	**New Zealand**

also the potential for the introduction and growth of pathogens, including STEC. **The increasing worldwide use of pre-packaged fresh-cut leafy vegetables to expand the supply chain might increase the potential for the presence of contaminated product in the marketplace through cross-contamination with STEC, and STEC replication during distribution and storage if fresh-cut leafy vegetables are improperly handled.** There is no processing treatment applied to fresh leafy vegetables that would eliminate or inactivate STEC, although contamination can be reduced by measures and treatments such as washing in water containing biocides. Examples of field level control measures provided in this document are illustrative only and their use and approval may vary by country. 1. Reason: For clarification 2. Suggest rewording that wider distribution increases exposure.	
Outbreaks, line 17, United Arab Emirates proposes to add a definition of biocides used to control the potential risk of contamination, the definition to include the necessary elaboration and using conditions of biocides, the proposed addition to be (between brackets) in item "2- Outbreaks", line 17, after the word biocides.	**United Arab Emirates**
Los brotes de enfermedades causadas por una amplia gama de patógenos microbianos, incluida la *Escherichia coli* productora de toxina Shiga (ECTS) se han relacionado con el consumo de verduras de hoja verde frescas. Las pruebas epidemiológicas, las investigaciones sobre brotes, los estudios y las evaluaciones de riesgo han identificado varias fuentes posibles de contaminación de las hortalizas de hoja verde frescas con ECTS, entre ellas el agua, los animales domésticos y salvajes, los trabajadores y las enmiendas del suelo a base de ~~estiércol~~estiércol no estabilizado adecuadamente[1]. ~~Las hortalizas de hoja verde frescas suelen cultivarse y cosecharse en grandes volúmenes, cada vez con más frecuencia en lugares donde la cosecha y la distribución de estas hortalizas es eficiente y rápida~~. Las hortalizas de hoja verde frescas se envasan de diversas maneras, entre ellas, en el campo, directamente para su comercialización; en el campo~~, sin corazón ,~~ y preparadas para su elaboración posterior, y como mezclas de hortalizas de hoja verde frescas precortadas y combinadas con otras hortalizas. Las medidas de control como los lavados antimicrobianos para reducir al mínimo la contaminación cruzada se pueden aplicar antes del envasado o antes del envío para su comercialización. También existe la posibilidad de que se introduzcan y proliferen patógenos, entre ellos la ECTS, a medida que las hortalizas de hoja verde frescas avanzan a lo largo de la cadena de suministro. El creciente uso en todo el mundo de las hortalizas de hoja verde recién cortadas y preenvasadas para ampliar la cadena de suministro podría aumentar la posibilidad de la presencia en el mercado de productos contaminados por contaminación cruzada con ECTS y la replicación de esta última durante la distribución y el almacenamiento si las hortalizas de hoja verde frescas no se manipulan correctamente. No existe ningún tratamiento de elaboración para las hortalizas de hoja verde frescas que elimine o inactive la ECTS, si bien se puede reducir la contaminación con medidas y tratamientos como el lavado con agua que contenga ~~biocidas~~biocidas autorizados por la autoridad comptente. Los ejemplos de medidas de control en el campo que se proporcionan en el presente documento son solamente ilustrativos, y su uso y aprobación podría variar entre los países miembros. Uruguay sugiere modificaciones en el texto.	**Uruguay**
1. OBJECTIVE	
Paragraph 4	
The objective of this Annex is to provide guidance to reduce the risk of foodborne illness from STEC associated with fresh leafy vegetables intended for human consumption without cooking , The Annex applies during primary production, harvesting, packing, processing, storage, distribution, marketing, and consumer awareness.	**Australia**
The objective of this Annex is to provide guidance to reduce the risk of foodborne illness from STEC associated with fresh leafy vegetables intended for human consumption without cooking-, during primary production, harvesting, packing, processing, storage, distribution, marketing, and ~~consumer~~ consumer awareness.	**Canada**

1. Remove space before comma. 2. Remove double space.	
Kenya proposes an editorial amendment by addition of 'for' to the last statement in the para to read: 'The objective of this Annex is to provide guidance to reduce the risk of foodborne illness from STEC associated with fresh leafy vegetables intended for human consumption without cooking, during primary production, harvesting, packing, processing, storage, distribution, marketing, and for consumer awareness .' Rationale: The addition of for in the statement brings clarity.	**Kenya**
The objective of this Annex is to provide guidance to reduce the risk of foodborne illness from STEC associated with fresh leafy vegetables intended for human consumption without cooking. This guidance covers the control of STEC ~~,~~during primary production, harvesting, packing, processing, storage, distribution, marketing, and for consumer awareness. ~~during primary production, harvesting, packing, processing, storage, distribution, marketing, and consumer awareness.~~ The Philippines propose the revision of the objectives to be more consistent with the other annex in Raw Milk and Milk Cheeses.	**Philippines**
2. SCOPE, USE AND DEFINITIONS	
2.2 Use	
Uruguay entiende que debería considerarse el documento de Directrices para el uso y la reutilización inocuos del agua en la producción y la elaboración de alimentos (CXG 100-2023) y su Anexo 1, "Productos frescos"	**Uruguay**
Paragraph 6	
The EUMS propose to refer also to General Principles of Food Hygiene (CXC 1-1969) and to the Guidelines for the Safe Use and Reuse of Water in Food Production, Annex I Fresh Produce (CXG 100-2023). Rationale: of major relevance for fresh leafy vegetables.	**European Union**
This Annex is supplementary to and should be used in conjunction with the main document, the *General Principles of Food Hygiene* (CXC 1-1969) ~~and~~ , the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003), and the Guidelines for the Safe Use and Reuse of Water in Food Production and Processing (CXG 100-2023), including Annex 1 "Fresh Produce". To be consistent with the main document, para 13, and to clarify that this annex is under the main document. Japan considers Water Guideline is also relevant to this document.	**Japan**
Paragraph 7	
Fresh leafy vegetables - Vegetables of a leafy nature where the leaf is intended for consumption raw, including, but not limited to, all varieties of lettuce, spinach, cabbage, chicory, endive, kale, radicchio, and fresh herbs such as coriander/cilantro, basil, curry leaf, colocasia leaves and parsley, ~~among~~ as well as other local products for foliar consumption.	**Australia**
Fresh leafy vegetables - Vegetables of a leafy nature where the leaf is ~~intended for consumption~~ to be consumed raw, including, but not limited to, all varieties of lettuce, spinach, cabbage, chicory, endive, kale, radicchio, and fresh herbs such as coriander/cilantro, basil, curry leaf, colocasia leaves and parsley, among other local products for foliar consumption. The Philippines propose the editorial changes for a clearer statement.	**Philippines**
3. PRIMARY PRODUCTION	

Paragraph 9	
Most contamination of fresh leafy vegetables with STEC is thought to occur during primary production. Fresh leafy vegetables are grown and harvested under a diverse range of climatic and geographical conditions. They can be grown in production sites indoors (e.g., greenhouses) and outdoors, harvested, and either field-packed or transported to a packing establishment, using various agricultural inputs and technologies, and on farms of varying sizes. ~~In each primary production area, it is necessary to consider the agricultural practices and procedures that could minimize the potential for contamination of fresh leafy vegetables with STEC, taking into account the conditions specific to the primary production area, type of products, and types of methods used in growing (including irrigation source and use of organic fertilization) and harvesting.~~ The agricultural practices and procedures used in each primary production area should minimise the potential for contamination of fresh leafy vegetables with STEC. They should take into account conditions specific to the primary production area, type of products, and methods used for growing, including irrigation source, use of organic fertilisers and harvesting.	**Australia**
~~Most contamination of fresh leafy vegetables with STEC is thought to occur during primary production. Fresh leafy vegetables are grown and harvested under a diverse range of climatic and geographical conditions. They can be grown in production sites indoors (e.g., greenhouses) and outdoors, harvested, and either field-packed or transported to a packing establishment, using various agricultural inputs and technologies, and on farms of varying sizes. In each primary production area, it is necessary to consider the agricultural practices and procedures that could minimize the potential for contamination of fresh leafy vegetables with STEC, taking into account the conditions specific to the primary production area, type of products, and types of methods used in growing (including irrigation source and use of organic fertilization) and harvesting.~~ The EUMS propose to delete this paragraph. Rationale: repetition of the introduction and no specific control measures for STEC in addition to the standards referred to in paragraph 8.	**European Union**
3.1 Location of the Production Site	
3.1 ~~Location of the Production Site~~ Environmental Hygiene Japan proposes to change the sentence structure (and title) as follows: - replace the title of Section 3.1 with "3.1 Environmental Hygiene"; - move the title of Section 3.1.1 and para 11 to para 13 bis, then replace the title of Section 3.1.1 with "3.1.1 Location of the Production Site"; and - delete the title of Section 3.1.2. - change the section number of Section 3.1.3 to 3.1.2. Rationale: Section 3.1 is not limited to the description of location and needs to be consistent with CXC53-2003(3.1 Environmental Hygiene) & CXC1-1969(8.1 Environmental control).	**Japan**
Paragraph 10	
Potential sources of STEC contamination should be identified prior to commencement of primary production activities and periodically evaluated for changes. Where possible, growers should evaluate present and previous uses of both indoor and outdoor fresh leafy vegetable primary production sites and the nearby and adjacent land (e.g., animal production, sewage treatment site) in order to identify potential sources of STEC. The assessment of environmental conditions is ~~particularly~~ important because subsequent interventions ~~would not be sufficient~~ are unlikely to ~~fully~~ remove STEC contamination that occurs during primary production, and ~~in some cases,~~ under some conditions ~~may~~ enable the growth of STEC, thereby increasing the risk of illness for consumers.	**Australia**

3.1.1 Neighbouring animal farms	
~~**3.1.1 Neighbouring animal farms**~~ Change the title to "Location of the Production Site" and relocate this section after para 13. Rational: refer to our comment on 3.1.	**Japan**
3.1.1 Explotaciones ~~ganaderas~~ pecuarias cercanas Uruguay sugiere incluir este punto en "Actividad animal"	**Uruguay**
Paragragh 11	
Animal production facilities located in proximity to sites where fresh leafy vegetables are grown and access to the growing site by wildlife can pose a significant likelihood of contamination of production fields or water sources with STEC. Concentrated animal feeding operations, dairy farms and cattle grazing lands present a significant risk of contamination of fresh leafy vegetables in the field; although guidelines exist for the distance between fields and nearby animal operations, the safe distance depends on factors that can increase or decrease the risk of contamination, such as topography of the land and opportunity for water runoff through or from such operations. Growers should evaluate the potential for ~~such~~ contamination with STEC associated with runoff and flooding and take measures to mitigate the risk ~~of STEC contamination associated with runoff and flooding~~ (e.g., terracing, digging a shallow ditch to prevent runoff from entering the field). Modifications are suggested to simplify the sentence.	**Canada**
Animal production facilities located in proximity to sites where fresh leafy vegetables are grown and access to the growing site by wildlife can pose a significant likelihood of contamination of production fields or water sources with STEC. Concentrated animal feeding operations, dairy farms and cattle grazing lands present a significant risk of contamination of fresh leafy vegetables in the field~~; although~~ . Although guidelines exist for the distance between fields and nearby animal operations, the safe distance depends on factors that can increase or decrease the risk of contamination, such as topography of the land and opportunity for water runoff through or from such operations. Growers should evaluate the potential for such contamination and take measures to mitigate the risk of STEC contamination associated with runoff and flooding (e.g., terracing, digging a shallow ditch to prevent runoff from entering the field). Suggest to break up in 2 sentences at the semi-colon as this is a long sentence to improve reading flow and simplify.	**Canada**
~~Animal production facilities located in proximity to sites where fresh leafy vegetables are grown and access to the growing site by wildlife can pose a significant likelihood of contamination of production fields or water sources with STEC. Concentrated animal feeding operations, dairy farms and cattle grazing lands present a significant risk of contamination of fresh leafy vegetables in the field; although guidelines exist for the distance between fields and nearby animal operations, the safe distance depends on factors that can increase or decrease the risk of contamination, such as topography of the land and opportunity for water runoff through or from such operations. Growers should evaluate the potential for such contamination and take measures to mitigate the risk of STEC contamination associated with runoff and flooding (e.g., terracing, digging a shallow ditch to prevent runoff from entering the field).~~ Move this para to 13 bis. Rational: refer to our comment on 3.1.	**Japan**

3.1.2 Environmental conditions	
~~**3.1.2 Environmental conditions**~~ Rational: refer to our comment on 3.1	**Japan**
Paragragh 13	
~~The effects of some environmental~~ 13. Where the effect of environmental events cannot be controlled, it should be evaluated for food safety hazards. For example, heavy rains or flood events ~~cannot~~ may increase the exposure of fresh leafy vegetables to STEC. Growers should evaluate whether to postpone or [cease] harvesting fresh leafy vegetables for consumption. Fresh leafy vegetables that contact flood waters should not be ~~controlled~~ harvested or consumed. When permitted by the competent authority, a risk assessment prior to harvest can be undertaken and if necessary, measures that mitigate risks from STEC to consumers should be undertaken [and if necessary measures that mitigate risks from STEC to consumers should be undertaken]. This does not include flooding of furrows for irrigation purposes, where the source of water is known and of appropriate quality and is not the result of a weather event. ~~may need to be evaluated. For example, heavy rains or flood events may increase the exposure of fresh leafy vegetables to STEC. When heavy rains occur, growers should evaluate the need to postpone harvesting fresh leafy vegetables for consumption. Fresh leafy vegetables that contact flood waters should not be consumed. When permitted by the competent authority, a prior risk assessment can be undertaken and if necessary measures that mitigate risks from STEC to consumers should be undertaken. This does not include flooding of furrows for irrigation purposes, where the source of water is known and of appropriate quality and is not the result of a weather event.~~ Additional comment on paragraph 13 edited to be in square brackets– this contradicts with paragraph 10 about risk mitigation for STEC – it advises subsequent interventions are unlikely to mitigate the risk of STEC. If mitigations for STEC are possible after adverse weather events, further clarification of the mitigation would be helpful. Or is it for example, water from heavy rains doesn't pose a risk for a particular area? In which case this isn't a risk mitigation but action possible following a risk assessment.	**Australia**
The effects of some environmental events cannot be controlled and may need to be evaluated. For example, heavy rains or flood events may increase the exposure of fresh leafy vegetables to STEC. When heavy rains occur, growers should evaluate the need to postpone harvesting fresh leafy vegetables for consumption. Fresh leafy vegetables that contact flood waters should not be consumed. When permitted by the competent authority, a prior risk assessment can be ~~undertaken~~ performed and if ~~necessary~~ necessary measures that mitigate risks from STEC to consumers should be ~~undertaken~~implemented. ~~This does~~ In this case, flooding do not include flooding of furrows for irrigation purposes, where the source of water is known and of appropriate quality and is not the result of a weather event.	**Canada**
The effects of some environmental events cannot be controlled and may need to be evaluated. For example, heavy rains or flood events may increase the exposure of fresh leafy vegetables to STEC. When heavy rains occur, growers should evaluate the need to postpone harvesting fresh leafy vegetables for consumption. Fresh leafy vegetables that contact flood waters should not be consumed~~. When permitted by the competent authority, a prior risk assessment can be undertaken and if necessary measures that mitigate risks from STEC to consumers should be undertaken.~~. This does not include flooding of furrows for irrigation purposes, where the source of water is known and of appropriate quality and is not the result of a weather event. With the inclusion of the statement "Fresh leafy vegetables that contact flood waters should not be consumed.", the deleted text in the comment above is no longer necessary. Further, the use of "should" allows for flexibility if deemed appropriate by a competent authority.	**USA**

3.1.3 Animal activity	
3.1.~~3~~ 2 Animal activity Rational: refer to our comment on 3.1	**Japan**
3.1.1 Location of the production site.13 bis (para 11)**3.1.3 Animal activity** Rational: refer to our comment on 3.1.	**Japan**
Paragragh 14	
Some wild and domestic animals present in the primary production environment are known to be potential carriers of STEC. Wild animals ~~represent a particularly difficult risk to manage because their presence is intermittent.~~ even if presence in intermittent, should be managed to minimise the potential for animal activity to contaminate fresh leafy vegetables with STEC). The following are particularly important to minimize the potential for animal activity to contaminate fresh leafy vegetables with STEC:	**Australia**
Se sabe que algunos animales salvajes y domésticos presentes en el ambiente de producción primaria son vectores potenciales de ECTS. Los animales salvajes representan un riesgo especialmente difícil de gestionar porque su presencia es intermitente. A fin de reducir al mínimo la posibilidad de que la actividad animal contamine las hortalizas de hoja verde frescas con ECTS, es de particular importancia lo siguiente: Uruguay propone incluir animales salvajes y domésticos como un sub punto.	**Uruguay**
~~Appropriate methods should be used in order to exclude animals from~~ Animals should be excluded from the primary production and handling areas to the extent practicable using effective methods, including the ~~primary production and handling areas to the extent practicable. Possible methods include the~~ use of physical barriers (e.g., fences) and active deterrents (e.g., noise makers, scarecrows, images of owls, foil strips).	**Australia**
United Arab Emirates suggests to modify the following statement: “Primary production and handling areas should be properly designed and maintained to reduce likelihood of attracting animals that can contaminate fresh leafy vegetables with STEC”. By the proposed following statement: Primary production and handling areas should be properly designed and maintained to prevent likelihood of attracting animals that can contaminate fresh leafy vegetables with STEC), justification for replacement prevent instead of reducing, in order to be compatible with the previous statement in the attached document, (Appropriate methods should be used in order to exclude animals from the primary production and handling areas to the extent practicable).	**United Arab Emirates**
Fresh leafy vegetable primary production areas should be regularly checked for evidence of the presence of wildlife or domestic animal activity (e.g., presence of animal faeces, bird nests, hairs/fur, large areas of animal tracks, burrowing, decomposing remains, crop damage from grazing), particularly near the time of harvesting. Where such evidence exists, growers should evaluate the risks to determine whether the fresh leafy vegetables in the affected area of the production site should be harvested for ~~consumption without cooking~~consumption. [or alternative: should be harvested with consideration of likely consumption without cooking]	**Australia**
Fresh leafy vegetable primary production areas should be regularly checked for evidence of the presence of wildlife or domestic animal activity (e.g., presence of animal faeces, bird nests, hairs/fur, large areas of animal tracks, burrowing, decomposing remains, crop damage from grazing), particularly near the time of harvesting. **Where such evidence exists, growers should evaluate the risks to determine whether the fresh leafy vegetables in the affected area of the production site should be harvested for consumption without cooking.**	**Canada**

The scope of this annex is leafy greens intended for raw consumption. Therefore, “Without cooking” should be removed. Or is the idea that growers could choose to harvest leafy greens in an area of animal activity if the leafy greens will be cooked?	
Paragragh 15	
Several parameters may influence the likelihood of contamination of fresh leafy vegetables with STEC from water: the source of water used for irrigation and the application of fertilizers and pesticides, the type of irrigation (e.g. drip, furrow, sprinkler, overhead), whether the edible portions of fresh leafy vegetables have direct contact with irrigation or other water, the timing of irrigation in relation to harvesting and, most importantly, the occurrence of STEC in the water used for irrigation or application of pesticides or fertilizers. Growers should identify and evaluate the sources of water used on the farm for the likelihood of contamination with STEC and identify measures to prevent or minimize STEC contamination (e.g., from livestock, wildlife, sewage treatment, human habitation, manure, and composting operations, or other intermittent or temporary environmental contamination, such as heavy rain or flooding). (Refer to ~~section 3.2.1.1 of~~ the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).) We suggest considering whether it would be best to refer to the Code of Hygienic Practice for Fresh Fruits and Vegetables (CXC 53-2003) in general instead of specific sections. The reason for this suggestion is that all specific mentions to sections will need to be updated again when the alignment of the Code of Practice for Fresh Fruits and Vegetables with the General Principles of Food Hygiene is done.	**Canada**
Several parameters may influence the likelihood of contamination of fresh leafy vegetables with STEC from water: the source of water used for irrigation and the application of fertilizers and pesticides, the type of irrigation (e.g. drip, furrow, sprinkler, overhead), whether the edible portions of fresh leafy vegetables have direct contact with irrigation or other water, the timing of irrigation in relation to harvesting and, most importantly, the occurrence of STEC in the water used for irrigation or application of pesticides or fertilizers. Growers should identify and evaluate the sources of water used on the farm for the likelihood of contamination with STEC and identify measures to prevent or minimize STEC contamination (**e.g.,** from livestock, wildlife, sewage treatment, human habitation, manure, and composting operations, or other intermittent or temporary environmental contamination, such as heavy rain or flooding). (Refer to section 3.2.1.1 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).) Sometimes e.g., and sometimes e.g. style needs reviewing throughout the document.	**Canada**
~~Several parameters may influence the likelihood of contamination of fresh leafy vegetables with STEC from water: the source of water used for irrigation and the application of fertilizers and pesticides, the type of irrigation (e.g. drip, furrow, sprinkler, overhead), whether the edible portions of fresh leafy vegetables have direct contact with irrigation or other water, the timing of irrigation in relation to harvesting and, most importantly, the occurrence of STEC in the water~~ used for irrigation or application of pesticides or fertilizers~~. Growers should identify and evaluate the sources of water used on the farm for the likelihood of contamination with STEC and identify measures to prevent or minimize STEC contamination (e.g., from livestock, wildlife, sewage treatment, human habitation, manure, and composting operations, or other intermittent or temporary environmental contamination, such as heavy rain or flooding). (Refer to section 3.2.1.1 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).)~~ Paragraph 15 to 17: The EUMS consider that these paragraphs could be replaced by a reference to CXG 100-2023, (Guidelines for the Safe Use and Reuse of Water in Food Production and Processing), Annex I. Rationale: no specific guidance on the control of STEC.	**European Union**
Several parameters may influence the likelihood of contamination of fresh leafy vegetables with STEC from water: the source of water used for irrigation and the application of fertilizers and pesticides, the type of irrigation (e.g. drip, furrow, sprinkler, overhead), whether the edible portions of fresh leafy vegetables have direct contact with irrigation or other water, the timing of irrigation in relation to harvesting and, most importantly,	**Japan**

the occurrence of STEC in the water used for irrigation or application of pesticides or fertilizers. Growers should identify and evaluate the sources of water used on the farm for the likelihood of contamination with STEC , and ~~identify~~ if water sources pose a higher risk of contamination, measures to prevent or minimize STEC contamination (e.g., from livestock, wildlife, sewage treatment, human habitation, manure, and composting operations, or other intermittent or temporary environmental contamination, such as heavy rain or ~~flooding)~~flooding) may be required. (Refer to section 3.2.1.1 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).) Rational: only to identify is not sufficient.	
Several parameters may influence the likelihood of contamination of fresh leafy vegetables with STEC from water: the source of water used for irrigation and the application of fertilizers and pesticides, the type of irrigation (e.g. drip, furrow, sprinkler, overhead), whether the edible portions of fresh leafy vegetables have direct contact with irrigation or other water, the timing of final irrigation in relation to harvesting and, most importantly, the occurrence of STEC in the water used for irrigation or application of pesticides or fertilizers. Growers should identify and evaluate the sources of water used on the farm for the likelihood of contamination with STEC and identify measures to prevent or minimize STEC contamination (e.g., from livestock, wildlife, sewage treatment, human habitation, manure, and composting operations, or other intermittent or temporary environmental contamination, such as heavy rain or flooding). (Refer to section 3.2.1.1 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).) Suggestion for clarity	**United Kingdom**
Paragragh 16	
Growers should periodically test the water they use for appropriate indicator microorganisms and, in addition, where necessary, STEC, according to the risk associated with the production. The frequency of testing will depend on the water source (i.e., lower for adequately maintained deep wells, higher for surface waters), the risks of environmental contamination, including intermittent or temporary contamination (e.g., heavy rain, flooding), or the implementation of a new water treatment process by growers. If the intended water source is found to contain unacceptable levels of indicator microorganisms or is contaminated with STEC, corrective actions should be taken to ensure that the water is suitable for its intended use. Possible corrective actions to prevent or minimize contamination of water for primary production may include the installation of fencing to prevent large animal contact, the proper maintenance of wells, water filtering, chemical water treatment, the prevention of the stirring of the sediment when drawing water, the construction of settling or holding ponds or water treatment facilities. The effectiveness of corrective actions should be verified **by periodic water testing**. Where possible, growers should have a contingency plan in place that identifies an alternative source of water fit for purpose. Refer to the *Guidelines for the Safe Use and Reuse of Water in Food Production and Processing* (CXG 100-2023), including Annex 1 “Fresh Produce”. Usually the effectiveness of corrective actions is tested after those are put in place and then periodically. This seems to imply only periodically.	**Canada**
Growers should periodically test the water they use for appropriate indicator microorganisms and, in addition, where necessary, STEC, according to the risk associated with the production. The frequency of testing will depend on the water source (i.e., lower for adequately maintained deep wells, higher for surface waters), the risks of environmental contamination, including intermittent or temporary contamination (e.g., heavy rain, flooding), or the implementation of a new water treatment process by growers. **If the intended water source is found to contain unacceptable levels of indicator microorganisms or is contaminated with STEC, corrective actions should be taken to ensure that the water is suitable for its intended use. Possible corrective actions to prevent or minimize contamination of water for primary production may include the installation of fencing to prevent large animal contact, the proper maintenance of wells, water filtering, chemical water treatment, the prevention of the stirring of the sediment when drawing water, the construction of settling or holding ponds or water treatment facilities.** The effectiveness of corrective actions should be verified by periodic water testing. Where possible,	**Canada**

growers should have a contingency plan in place that identifies an alternative source of water fit for purpose. Refer to the *Guidelines for the Safe Use and Reuse of Water in Food Production and Processing* (CXG 100-2023), including Annex 1 “Fresh Produce”. The recommendation in these sentences should be clarified. Because if the intended water is contaminated, then the only corrective actions is to treat the water before use, or to use it for another purpose. The other corrective actions listed here help to prevent future contamination of water.	
~~Growers should periodically test the water they use for appropriate indicator microorganisms and, in addition, where necessary, STEC, according to the risk associated with the production. The frequency of testing will depend on the water source (i.e., lower for adequately maintained deep wells, higher for surface waters), the risks of environmental contamination, including intermittent or temporary contamination (e.g., heavy rain, flooding), or the implementation of a new water treatment process by growers. If the intended water source is found to contain unacceptable levels of indicator microorganisms or is contaminated with STEC, corrective actions should be taken to ensure that the water is suitable for its intended use. Possible corrective actions to prevent or minimize contamination of water for primary production may include the installation of fencing to prevent large animal contact, the proper maintenance of wells, water filtering, chemical water treatment, the prevention of the stirring of the sediment when drawing water, the construction of settling or holding ponds or water treatment facilities. The effectiveness of corrective actions should be verified by periodic water testing. Where possible, growers should have a contingency plan in place that identifies an alternative source of water fit for purpose. Refer to the *Guidelines for the Safe Use and Reuse of Water in Food Production and Processing* (CXG 100-2023), including Annex 1 “Fresh Produce”.~~ Paragraph 15 to 17: The EUMS consider that these paragraphs could be replaced by a reference to CXG 100-2023, (Guidelines for the Safe Use and Reuse of Water in Food Production and Processing), Annex I. Rationale: no specific guidance on the control of STEC.	**European Union**
Growers should ~~periodically test~~ assess the microbiological quality of water ~~they use~~ and its suitability for ~~appropriate~~ the intended use. When water is tested for indicator ~~microorganisms~~ organisms and, in addition, where necessary, STEC, the results should be used by growers and associated operators to inform on the use of water according to the risk associated with the production. The frequency of testing will depend on the water source (i.e., lower for adequately maintained deep wells, higher for surface waters), the risks of environmental contamination, including intermittent or temporary contamination (e.g., heavy rain, flooding), or the implementation of a new water treatment process by growers. If the intended water source is found to contain unacceptable levels of indicator microorganisms or is contaminated with STEC, corrective actions should be taken to ensure that the water is suitable for its intended use. Possible corrective actions to prevent or minimize contamination of water for primary production may include the installation of fencing to prevent large animal contact, the proper maintenance of wells, water filtering, chemical water treatment, the prevention of the stirring of the sediment when drawing water, the construction of settling or holding ponds or water treatment facilities. The effectiveness of corrective actions should be verified by periodic water testing. Where possible, growers should have a contingency plan in place that identifies an alternative source of water fit for purpose. Refer to the *Guidelines for the Safe Use and Reuse of Water in Food Production and Processing* (CXG 100-2023), including Annex 1 “Fresh Produce”. 1st sentence of para 16 should be reworded to be aligned with the text of CXG 100-2023 (taken from para 10 and 11 of Annex I). Japan also wonders the scientific basis of the 1st sentence since the JEMRA report published after CCFH53, which discussed CXG100-2023 (MRA42, 44), mentions challenges of testing water for primary production, but does not say that water testing is necessary in all situations. If our proposal is not acceptable and water quality testing is still recommended, then the first sentence of this paragraph should be replaced with the following, consistent with the text of CXC53-2003, for the sake of viability for small producers.	**Japan**

”Where necessary, growers should periodically test the water they use for appropriate indicator microorganisms and, in addition, STEC, according to the risk associated with the production.	
Growers should periodically test the water they use for appropriate indicator microorganisms and, in addition, where necessary, STEC, according to the risk associated with the production. The frequency of testing will depend on the water source (i.e., lower for adequately maintained deep wells, higher for surface waters), the risks of environmental contamination, including intermittent or temporary contamination (e.g., heavy rain, flooding), or the implementation of a new water treatment process by growers. If the intended water source is found to contain unacceptable levels of indicator microorganisms or is contaminated with STEC, corrective actions should be taken to ensure that the water is suitable for its intended use. Possible corrective actions to prevent or minimize contamination of water for primary production may include the installation of fencing to prevent large animal contact, the proper maintenance of wells, water filtering, chemical water treatment, the prevention of the stirring of the sediment when drawing water, the construction of settling or holding ponds or water treatment facilities. The effectiveness of corrective actions should be verified by periodic water testing. Where possible, growers should have a contingency plan in place that identifies an alternative source of water fit for purpose. Refer to the *Guidelines for the Safe Use and Reuse of Water in Food Production and Processing* (CXG 100-2023), including Annex 1 “Fresh Produce”. Reword: Growers should periodically test the water they use (depending on where it is sourced) for appropriate indicator microorganisms Reason: Depending on the water source, there is no need if water is already controlled and tested by authorities	**New Zealand**
Growers should periodically test the water they use for appropriate indicator microorganisms and, in addition, where necessary, STEC, according to the risk associated with the production. The frequency of testing will depend on the water source (i.e., lower for adequately maintained deep wells, higher for surface waters), the risks of environmental contamination, including intermittent or temporary contamination (e.g., heavy rain, flooding), or the implementation of a new water treatment process by growers. If the intended water source is found to contain unacceptable levels of indicator microorganisms or is contaminated with STEC, corrective actions should be taken to ensure that the water is suitable for its intended use. Possible corrective actions to prevent or minimize contamination of water for primary production may include the installation of fencing to prevent large animal contact, the proper maintenance of wells, water filtering, chemical water treatment, the prevention of the stirring of the sediment when drawing water, the construction of settling or holding ponds or water treatment facilities. The effectiveness of corrective actions should be verified by periodic water ~~testing~~testing based on risk assessment. Where possible, growers should have a contingency plan in place that identifies an alternative source of water fit for purpose. Refer to the *Guidelines for the Safe Use and Reuse of Water in Food Production and Processing* (CXG 100-2023), including Annex 1 “Fresh Produce”. The Philippines proposes to add the text “based on risk assessment” to give clarity that risk assessment should be the basis of schedule for water testing especially that it is related to the verification of effectiveness of corrective actions to prevent or minimize contamination of water for primary production.	**Philippines**
Where necessary, g~~Growers should periodically~~ rowers should test the water they use for appropriate indicator microorganisms and, in addition, where necessary, STEC, according to the risk associated with the production. The frequency of testing will depend on the water source (i.e., lower for adequately maintained deep wells, higher for surface waters), the risks of environmental contamination, including intermittent or temporary contamination (e.g., heavy rain, flooding), or the implementation of a new water treatment process by growers. If the intended water source is found to contain unacceptable levels of indicator microorganisms or is contaminated with STEC, corrective actions should be taken to ensure that the water is suitable for its intended use. Possible corrective actions to prevent or minimize contamination of water for primary production may include the installation of fencing to prevent large animal contact, the proper maintenance of wells, water filtering, chemical water treatment, the prevention of the stirring of the sediment when drawing water, the construction of settling or holding ponds or water treatment facilities. The effectiveness of corrective actions should be verified by periodic water testing. Where possible, growers should have a	**Thailand**

contingency plan in place that identifies an alternative source of water fit for purpose. Refer to the *Guidelines for the Safe Use and Reuse of Water in Food Production and Processing* (CXG 100-2023), including Annex 1 “Fresh Produce”. Rationale: The testing of appropriate indicator microorganisms should be in accordance with associated risk in a similar way as the testing for STEC. We still think that water should only be tested for appropriate indicator organisms, where necessary, in accordance with the risk associated with the water sources as periodic testing of indicator organisms is a great burden for small holder farmers. Also, this requirement should be in line with those in Section 3.2.1.1 Water for primary production of the CXC 53-2003.	
Los productores deberían analizar periódicamente el agua que utilizan, para detectar la presencia de microorganismos indicadores adecuados y, además, cuando sea necesario, de ECTS, de acuerdo con el riesgo asociado a la producción. La frecuencia de los análisis dependerá de la fuente de la que proceda el agua (es decir, menor para pozos profundos debidamente mantenidos y más elevada para las aguas superficiales), los riesgos de contaminación ambiental, incluida la contaminación temporal o intermitente (por ejemplo, lluvias torrenciales, inundaciones) o de la aplicación de un nuevo proceso de tratamiento de aguas por parte de los productores. Si se determina que la fuente de agua prevista contiene niveles inaceptables de microorganismos indicadores o que está contaminada con ECTS, deberían tomarse medidas correctivas con el fin de garantizar que el agua sea idónea para el uso previsto. Las posibles medidas correctivas para prevenir o reducir al mínimo la contaminación del agua en la producción primaria pueden incluir la instalación de cercas para evitar el contacto con animales de especies mayores, el mantenimiento adecuado de los pozos, la filtración del agua, el tratamiento químico del agua, evitar agitar el sedimento durante la obtención de agua, la construcción de estanques de decantación o de retención o instalaciones de tratamiento de aguas. Debería verificarse la efectividad de las acciones correctivas mediante análisis periódicos del agua~~. Cuando sea posible,~~ . los productores deberían tener un plan de contingencia para establecer una fuente alternativa de agua apta para su finalidad. Véanse las *Directrices para el uso y la reutilización inocuos del agua en la producción y la elaboración de alimentos* (CXG 100-2023) y su Anexo 1, “Productos frescos”. Se sugiere eliminar "Cuando sea posible"	**Uruguay**
Paragragh 17	
It is especially critical in hydroponic operations to maintain the ~~quality~~ safety of water used as the growth medium for fresh leafy vegetables to reduce the likelihood of contamination and survival of STEC; the nutrient solution used may enhance the survival or growth of STEC. (Refer to section 3.2.1.1.3 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).)	**Australia**
It is especially critical in hydroponic operations to maintain the quality of water used as the growth medium for fresh leafy vegetables to reduce the likelihood of contamination and survival of STEC; the nutrient solution used may enhance the survival or growth of STEC. (Refer to ~~section 3.2.1.1.3 of~~ the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).) We suggest considering whether it would be best to refer to the Code of Hygienic Practice for Fresh Fruits and Vegetables (CXC 53-2003) in general instead of specific sections. The reason for this suggestion is that all specific mentions to sections will need to be updated again when the alignment of the Code of Practice for Fresh Fruits and Vegetables with the General Principles of Food Hygiene is done.	**Canada**
~~It is especially critical in hydroponic operations to maintain the quality of water used as the growth medium for fresh leafy vegetables to reduce the likelihood of contamination and survival of STEC; the nutrient solution used may enhance the survival or growth of STEC. (Refer to section 3.2.1.1.3 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).)~~ Paragraph 15 to 17: The EUMS consider that these paragraphs could be replaced by a reference to CXG 100-2023, (Guidelines for the Safe Use and Reuse of Water in Food Production and Processing), Annex I. Rationale: no specific guidance on the control of STEC.	**European Union**

It is especially critical in hydroponic operations to maintain the quality of water used as the growth medium for fresh leafy vegetables to reduce the likelihood of contamination and survival of STEC; the nutrient solution used may enhance the survival or growth of STEC. (Refer to section 3.2.1.1.3 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).) Kenya proposes an editorial amendment to where references are used with the removal of brackets in the last statement. It is especially critical in hydroponic operations to maintain the quality of water used as the growth medium for fresh leafy vegetables to reduce the likelihood of contamination and survival of STEC; the nutrient solution used may enhance the survival or growth of STEC. Refer to section 3.2.1.1.3 of the Code of Hygienic Practice for Fresh Fruits and Vegetables (CXC 53-2003). Justification: For Consistency within the document	**Kenya**
Paragragh 18	
The use of manure, biosolids and other natural fertilizers in the production of fresh leafy vegetables should be managed to limit the potential for contamination with STEC. STEC can persist in these materials for weeks or even months, if treatment is inadequate. Composting can be effective in controlling STEC in manure, depending on factors that include time, temperature, indigenous microorganisms, moisture, composition of the compost, pile size, and turning of the pile. Another manure treatment method involves anaerobic digestion. Treatment methods should be validated to inactivate STEC. Refer to ~~section 3.2.1.2 of~~ the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003) for practices to minimize contamination of fresh leafy vegetables with microbial pathogens such as STEC in manure, biosolids and other natural fertilizers. We suggest considering whether it would be best to refer to the Code of Hygienic Practice for Fresh Fruits and Vegetables (CXC 53-2003) in general instead of specific sections. The reason for this suggestion is that all specific mentions to sections will need to be updated again when the alignment of the Code of Practice for Fresh Fruits and Vegetables with the General Principles of Food Hygiene is done.	**Canada**
Editorial amendment to the para to read: The use of manure, biosolids and other natural fertilizers in the production of fresh leafy vegetables should be managed to limit the potential for contamination with STEC. STEC can persist in these materials for weeks or even months if treatment is inadequate. Anaerobic digestion and composting can be effective in controlling STEC in manure, depending on factors that include time, temperature, indigenous microorganisms, moisture, compost composition, pile size, and turning of the pile. Treatment methods should be validated to inactivate STEC. Refer to section 3.2.1.2 of the Code of Hygienic Practice for Fresh Fruits and Vegetables (CXC 53-2003) for practices to minimize contamination of fresh leafy vegetables with microbial pathogens such as STEC in manure, biosolids, and other natural fertilizers. Justification: Anaerobic Digestion is one of the manure treatment methods.	**Kenya**
The use of manure, biosolids and other natural fertilizers in the production of fresh leafy vegetables should be managed to limit the potential for contamination with STEC. **STEC can persist in these materials for weeks or even months, if treatment is inadequate.** Composting can be effective in controlling STEC in manure, depending on factors that include time, temperature, indigenous microorganisms, moisture, composition of the compost, pile size, and turning of the pile. Another manure treatment method involves anaerobic digestion. Treatment methods should be validated to inactivate STEC. Refer to section 3.2.1.2 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003) for practices to minimize contamination of fresh leafy vegetables with microbial pathogens such as STEC in manure, biosolids and other natural fertilizers. Reword - STEC can persist in manure, biosolids and other natural fertilizers for weeks or even months, if treatment of these materials is inadequate.	**New Zealand**

Reason: Clarity	
The use of treated manure, biosolids and other natural fertilizers in the production of fresh leafy vegetables should be managed to limit the potential for contamination with STEC. STEC can persist in these materials for weeks or even months, if treatment is inadequate. Composting can be effective in controlling STEC in manure, depending on factors that include time, temperature, indigenous microorganisms, moisture, composition of the compost, pile size, and turning of the pile. Another manure treatment method involves anaerobic digestion. Treatment methods should be validated to inactivate STEC. Refer to section 3.2.1.2 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003) for practices to minimize contamination of fresh leafy vegetables with microbial pathogens such as STEC in manure, biosolids and other natural fertilizers. The Philippines suggests to add a word “treated” to add as qualifier to give clarity to the text.	**Philippines**
El empleo de estiércol, biosólidos y otros fertilizantes naturales en la producción de hortalizas de hoja verde frescas debería realizarse de manera que se limite la posibilidad de contaminación con ECTS. La ECTS puede persistir durante semanas o incluso meses, si el tratamiento es inadecuado. El compostaje puede ser eficaz para controlar la ECTS en el estiércol, dependiendo de factores como el tiempo, la temperatura, los microorganismos ~~indígenas~~autóctonos, la humedad, la composición del compost, el tamaño de la pila y el volteo de esta última. Otro método de tratamiento del estiércol incluye la digestión anaerobia. Los métodos de tratamiento deberían estar validados para inactivar la ECTS. Véase la Sección 3.2.1.2 del *Código de prácticas de higiene para las frutas y hortalizas frescas* (CXC 53-2003), donde se mencionan las prácticas destinadas a reducir al mínimo la contaminación de las hortalizas de hoja verde frescas con patógenos microbianos, como la ECTS, que se encuentran en el estiércol, los biosólidos y otros fertilizantes naturales. Sustituir indigenas por autóctonos	**Uruguay**
Paragragh 19	
Hygiene and health requirements should be followed to ensure that personnel who come into direct contact with fresh leafy vegetables prior to, during or after harvesting will not contaminate them with STEC. Adequate access to, and use of, hygienic and sanitary facilities, including adequate means **for hygienically washing and drying hands,** are critical to minimize the potential for workers to contaminate fresh leafy vegetables. People known or suspected to be suffering from gastrointestinal illness should not be allowed to enter any area where handling fresh leafy vegetables occurs, including the harvest area. Refer to ~~section 3.2.3 of~~ the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003) for practices to minimize microbial pathogens such as STEC. 1. For consideration, in Canadian regulations (SFCR 67 (2)) it refers to facilities that permit the effective cleaning of hands. It is worded this way to allow other hand cleaning options (e.g. hand sanitizers) supported by evidence that they are effective. 2. We suggest considering whether it would be best to refer to the Code of Hygienic Practice for Fresh Fruits and Vegetables (CXC 53-2003) in general instead of specific sections. The reason for this suggestion is that all specific mentions to sections will need to be updated again when the alignment of the Code of Practice for Fresh Fruits and Vegetables with the General Principles of Food Hygiene is done.	**Canada**
El CCFH Perú sugiere sustituir y agregar los textos resaltados en negrita: DICE: 19. Deberían cumplirse los requisitos de salud e higiene para que no exista la posibilidad de que las hortalizas de hoja verde frescas resulten contaminadas con ECTS por el personal que entra en contacto directo con ellas antes de la recolección, o durante o después de ella. Un	**Peru**

acceso y uso adecuados de las instalaciones higiénicas y sanitarias, incluidos medios apropiados para lavarse y secarse las manos de manera higiénica, son fundamentales para reducir al mínimo la posibilidad de que los trabajadores contaminen las hortalizas de hoja verde frescas. DEBE DE DECIR: 19. Deberían cumplirse los requisitos de salud e higiene para que no exista la posibilidad de que las hortalizas de hoja verde frescas resulten contaminadas con ECTS por el personal que entra en contacto directo con ellas, antes, durante o después de la recolección. Un acceso y uso adecuados de las instalaciones higiénicas y sanitarias, incluidos medios apropiados para lavarse, desinfectarse y secarse las manos de manera higiénica, son fundamentales para reducir al mínimo la posibilidad de que los trabajadores contaminen las hortalizas de hoja verde frescas.	
United Arab Emirates proposes to modify the following statement:"19. Hygiene and health requirements should be followed to ensure that personnel who come into direct contact with fresh leafy vegetables prior to, during or after harvesting will not contaminate them with STEC". By the proposed following statement: 19. Hygiene and health requirements should be followed to ensure that personnel who come into direct contact with fresh leafy vegetables prior to, during or after harvesting will not contaminate them with microbial pathogens such as STEC), justification for the proposed replacement: Hygiene and health requirements required to ensure that personnel who come into direct contact with fresh leafy vegetables to be more restricted to include prevention of all types of microbial pathogens such as STEC.	**United Arab Emirates**
3.2.4 Harvesting	
3.2.4 ~~Harvesting~~Harvesting and equipment	**Australia**
Paragragh 20	
There is some replication across paragraphs 20, 21 and 22 which could be removed	**Australia**
The field should be evaluated for animal intrusion, the presence of faecal deposits, or other sources of STEC contamination prior to harvest to determine if the field or portions thereof should not be harvested. Growers should avoid moving harvesting equipment across fields where manure or compost has been applied. Harvesting equipment should be designed and constructed to ensure that, when necessary, ~~they~~ it can be cleaned, disinfected, and maintained to avoid the contamination of fresh leafy vegetables (e.g., if the equipment runs over an area with animal intrusion and faecal deposits). Containers stored outside and field containers to be re-used should be cleaned and, as appropriate, disinfected before being used to transport fresh leafy vegetables.	**Canada**
United Arab Emirates proposes to modify the following statement: The field should be evaluated for animal intrusion, the presence of faecal deposits, or other sources of STEC contamination prior to harvest to determine if the field or portions thereof should not be harvested), By the proposed following statement: The field should be evaluated for animal intrusion, the presence of faecal deposits, or other sources of STEC contamination prior to harvest, to evaluate whether the field or portions thereof should not be harvested due to the potential for contamination with pathogens such as STEC, and/or to take the necessary corrective actions to eliminate the source/s of contamination and to remove the pathogenic bacteria from the produce.	**United Arab Emirates**
The field should be evaluated for animal intrusion, the presence of faecal deposits, or other sources of STEC contamination prior to harvest to determine if the field or portions thereof should not be harvested. Growers should avoid moving harvesting equipment across fields where manure or compost has been ~~applied~~applied or where livestock are present or have been recently. Harvesting equipment should be designed and constructed to ensure that, when necessary, they can be cleaned, disinfected, and maintained to avoid the contamination of fresh leafy vegetables (e.g., if the equipment runs over an area with animal intrusion and faecal deposits). Containers stored outside and field containers to be re-used should be cleaned and, as appropriate, disinfected before being used to transport fresh leafy vegetables. The UK suggests the amendments as an additional measure to prevent causes of contamination.	**United Kingdom**

Paragragh 21	
When packing fresh leafy vegetables in the field, ~~and noting that~~ containers are often open-topped and stacked, care should be taken to avoid contaminating containers or bins by exposure to manure or other contamination sources. When fresh leafy vegetables are trimmed or cored in the field, knives and cutting edges should be cleaned and disinfected frequently to minimize the potential for cross-contamination with STEC.	**Canada**
When packing fresh leafy vegetables in the field, and noting that containers are often open-topped and stacked, care should be taken to avoid contaminating containers or bins by exposure to manure or other contamination sources. When fresh leafy vegetables are trimmed or cored in the field, knives and cutting edges should be cleaned and disinfected frequently to minimize the potential for cross-contamination with STEC. Editorial amendment to the para with the addition of 'as appropriate' to read: When packing fresh leafy vegetables in the field, and noting that containers are often open-topped and stacked, care should be taken to avoid contaminating containers or bins by exposure to manure or other contamination sources. When fresh leafy vegetables are trimmed or cored in the field, knives and cutting edges should be cleaned and, 'as appropriate' disinfected frequently to minimize the potential for cross-contamination with STEC. Justification: Disinfection is dependent on circumstances.	**Kenya**
When packing fresh leafy vegetables in the field, and noting that containers are often open-topped and stacked, care should be taken to avoid contaminating containers or bins by exposure to manure or other contamination sources. When fresh leafy vegetables are trimmed or cored in the field, knives and cutting edges should be cleaned and disinfected frequently to minimize the potential for cross-contamination with STEC. Reword - When packing fresh leafy vegetables in the field, care should be taken to avoid contaminating containers or bins by exposure to manure or other contamination sources, noting that containers are often open-topped and stacked. Reason: Clarity	**New Zealand**
Cuando se envasen las hortalizas de hoja verde frescas en el campo, teniendo en cuenta que los envases suelen estar abiertos y a menudo se apilan, se debería tener cuidado para evitar la contaminación de los recipientes o cajones por exposición al estiércol u otras fuentes de contaminación. Cuando a las hortalizas de hoja verde frescas se las ~~recorta o~~ corta y se les ~~quita el corazón~~ deshoja en el campo, los cuchillos y los bordes de corte deberían limpiarse y desinfectarse con frecuencia para reducir al mínimo la posibilidad de contaminación cruzada con ECTS.	**Uruguay**
Paragragh 22	
Fresh leafy vegetables should be stored and transported under conditions that will minimize the potential for STEC contamination and/or growth **and noting that containers are often open-topped and stacked.** Fresh leafy vegetables should not be transported in vehicles previously used to carry potentially contaminated materials (e.g., heavily soiled root vegetables, live animals, animal manure, compost, or biosolids). When vehicle receptacles or containers have been used for the transport of products other than fresh leafy vegetables, effective cleaning and disinfection should be carried out between loads to avoid cross-contamination. This part of the sentence made sense in the previous point (paragraph 21). The intent is unclear here, therefore, we suggest deleting it or modifying the sentence.	**Canada**
Editorial amendment to the para with sentence three inserted in between statements 1 and 2 to read:	**Kenya**

Fresh leafy vegetables should be stored and transported under conditions that will minimize the potential for STEC contamination and/or growth and noting that containers are often open-topped and stacked. When vehicle receptacles or containers have been used for the transport of products other than fresh leafy vegetables, effective cleaning and disinfection should be carried out between loads to avoid cross-contamination. Fresh leafy vegetables should not be transported in vehicles previously used to carry potentially contaminated materials (e.g., heavily soiled root vegetables, live animals, animal manure, compost, or biosolids). Justification: For Clarity	
4. PACKING OPERATIONS	
Paragragh 24	
Refer to the *General Principles of Food Hygiene* (CXC 1-1969). ~~Time~~ Applicable time and temperature control during packing and storage is essential to prevent growth of any STEC that may be present, since an increase in numbers of STEC will increase the risk of illness. The Philippines suggests to add a word “applicable” due to varying geographical weather condition of countries that may use these guidelines.	**Philippines**
Paragragh 25	
The cooling of fresh leafy vegetables should take place as rapidly as possible to minimize growth of any STEC that may be present, and in a manner that does not contribute to contamination of product with STEC. For example, fresh leafy vegetables can be cooled immediately after harvest by using ice (e.g., for parsley), forced-air cooling, vacuum cooling (e.g., for iceberg lettuce), hydrocooling or spray-vacuum (hydro-vac) cooling. ~~-~~ Fresh ~~When cold damage is not a concern, fresh~~ leafy vegetables should be cooled to ~~temperatures <7°C to~~ prevent the growth of ~~STEC. For fresh leafy vegetables susceptible to quality damage at temperatures <7°C, the growth of~~ STEC ~~should be minimized by cooling to temperatures as low as possible~~ while avoiding quality damage. About temperatures for storage, JEMRA report says, "there is little data available concerning the growth of non-O157 STEC in leafy vegetables." Japan would like to propose not to write a specific temperature (< 7 °C) as a measure to prevent the growth of general STEC. If it is necessary to have a specific temperature, Japan proposes a footnote, only referring to O157: "A temperature <7 °C may prevent the growth of O157 in fresh leafy vegetables." . . . . . . JEMRA microbiological risk assessment series 44 Prevention and control of microbiological hazards in fresh fruits and vegetables Part 4: Specific commodities Annexes 1 Q6. It has been suggested that we include a recommendation for storage under 7 °C here. JEMRA, does the science support this as an appropriate temperature for preventing growth of STEC in fresh leafy vegetables? Are there other temperatures combined with time that could apply? A6. There is no convincing scientific evidence that E. coli O157:H7 can grow on leafy vegetables at temperatures lower than 7 °C. Moreover, there is little data available concerning the growth of non-O157 STEC in leafy vegetables. The following references are offered in support of this assessment:	**Japan**
Paragragh 26	

If water, including ice, used for cooling comes into direct contact with fresh leafy vegetables, it should be fit for purpose to minimize the likelihood of cross-contamination. When biocides are used, the concentration and other appropriate parameters (e.g., pH and temperature) in this water should be controlled, monitored, and recorded to ensure ~~[cross-contamination will be sufficiently minimized.]~~ [that biocides ~~are~~ is sufficient to reduce the potential risk of cross-contamination.] We suggest the second option with a correction	**Argentina**
If water, including ice, used for cooling comes into direct contact with fresh leafy vegetables, it should be fit for purpose to minimize the likelihood of cross-contamination. When biocides are used, the concentration and other appropriate parameters (e.g., pH and temperature) in this water should be controlled, monitored, and recorded to ensure [cross-contamination will be sufficiently minimized.] [that biocides ~~are sufficient~~ concentration remain adequate to reduce the potential risk of cross-contamination.] Australia prefers the text within the second set of brackets with a slight amendment.	**Australia**
If water, including ice, used for cooling comes into direct contact with fresh leafy vegetables, it should be fit for purpose to minimize the likelihood of cross-contamination. When biocides are used, the concentration and other appropriate parameters (e.g., pH and temperature) in this water should be controlled, monitored, and recorded to **ensure [cross-contamination will be sufficiently minimized.] [that biocides are sufficient to reduce the potential risk of cross-contamination.]** Suggest another option, similar to paragraph 27. ...to ensure the maintenance of effective concentration.	**Canada**
If water, including ice, used for cooling comes into direct contact with fresh leafy vegetables, it should be fit for purpose to minimize the likelihood of cross-contamination. When biocides are used, the concentration and other appropriate parameters (e.g., pH and temperature) in this water should be controlled, monitored, and recorded to ensure ~~[cross-contamination will be sufficiently minimized.]~~ [biocides are sufficient to avoid accumulation of microorganisms in the process water and reduce the risk of cross-contamination~~that biocides are sufficient to reduce the potential risk of cross-contamination.]~~ Rationale: both are relevant.	**European Union**
If water, including ice, used for cooling comes into direct contact with fresh leafy vegetables, it should be fit for purpose to minimize the likelihood of cross-contamination. When biocides are used, the concentration and other appropriate parameters (e.g., pH and temperature) in this water should be controlled, monitored, and recorded to ensure ~~[cross-contamination~~ [that chemical contamination will be sufficiently minimized.~~] []that biocides are sufficient to reduce the potential risk of cross-contamination.]~~ Indonesia is in favor of the use the first within squared brackets, but with slightly adapted wording to “that chemical contamination will be sufficiently minimized” because the control, monitoring and recording are conducted to assure that biocides is used per GHP, in the amount and condition that is sufficient to serve the purpose and does not provide additional chemical contamination to the product. The other alternative is to use the same wording as paragraph 27 when discussing the use of biocides for water.	**Indonesia**
If water, including ice, used for cooling comes into direct contact with fresh leafy vegetables, it should be fit for purpose to minimize the likelihood of cross-contamination. When biocides are used, the concentration and other appropriate parameters (e.g., pH and temperature) in	**Kenya**

this water should be controlled, monitored, and recorded to ensure **[cross-contamination will be sufficiently minimized.] [that biocides are sufficient to reduce the potential risk of cross-contamination.]** Kenya proposes that the square brackets be removed and deletion of the second sentence in square brackets to read: If water, including ice, used for cooling comes into direct contact with fresh leafy vegetables, it should be fit for purpose to minimize the likelihood of cross-contamination. When biocides are used, the concentration and other appropriate parameters (e.g., pH and temperature) in this water should be controlled, monitored, and recorded to ensure cross-contamination will be sufficiently minimized. Justification: The first sentence has been selected because it better explains the appropriate use of biocides. The second sentence is superfluous, and it is a repetition of what has already been covered in the parameters being controlled.	
If water, including ice, used for cooling comes into direct contact with fresh leafy vegetables, it should be fit for purpose to minimize the likelihood of cross-contamination. When biocides are used, the concentration and other appropriate parameters (e.g., pH and temperature) in this water should be controlled, monitored, and recorded to ensure [cross-contamination will be sufficiently minimized.] ~~[that biocides are sufficient to reduce the potential risk of cross-contamination.]~~ The Philippines supports the first option as it is clearer and more direct to the point.	**Philippines**
If water, including ice, used for cooling comes into direct contact with fresh leafy vegetables, it should be fit for purpose to minimize the likelihood of cross-contamination. When biocides are used, the concentration and other appropriate parameters (e.g., pH and temperature) in this water should be controlled, monitored, and recorded to ensure ~~[cross-contamination will be sufficiently minimized.]~~ [that biocides are sufficient to reduce the potential risk of cross-contamination.~~]~~ Rationale: The text is clearer and it is in line with CXC 53-2003.	**Thailand**
Si el agua, incluido el hielo, que se utilice para el enfriamiento entra en contacto directo con hortalizas de hoja verde frescas, debería ser adecuada para el fin previsto, con el fin de reducir al mínimo la probabilidad de contaminación cruzada. Cuando se utilicen biocidas, se deberían controlar, supervisar y registrar la concentración y otros parámetros adecuados (como el pH y la temperatura) en esta agua para asegurar ~~[que la contaminación cruzada se minimice en la medida suficiente]~~. [que los biocidas sean suficientes para reducir el riesgo potencial de contaminación cruzada]. Uruguay prefiere la opción "que los biocidas sean suficientes para reducir el riesgo potencial de contaminación cruzada]."	**Uruguay**
If water, including ice, used for cooling comes into direct contact with fresh leafy vegetables, it should be fit for purpose to minimize the likelihood of cross-contamination. When biocides are used, the concentration of biocides and other appropriate parameters (e.g., pH and temperature) in this water should be controlled, monitored, and recorded to ensure ~~[cross-contamination~~ cross-contamination will be sufficiently minimized.~~]~~ ~~[that biocides are sufficient to reduce the potential risk of cross-contamination.]~~ With the insertion “of biocides” in the edited text, we prefer the first option and propose deletion of the bracketed second option.	**USA**
Paragragh 27	
The washing of fresh leafy vegetables should follow good hygienic practices (GHPs) to prevent or minimize the potential for the introduction or spread of STEC in wash water. All water used for washing fresh leafy vegetables should be fit for purpose. ~~When washing fresh leafy vegetables, biocides, when identified as necessary, should be added to wash water as per GHPs, with their levels monitored, controlled and~~	**Australia**

~~recorded regularly during production to ensure the maintenance of effective concentrations.~~ The characteristics of post-harvest water that may impact the efficacy of the biocidal treatments (e.g., the pH, turbidity and water hardness) should be controlled, monitored and recorded.	
The washing of fresh leafy vegetables should follow good hygienic practices (GHPs) to prevent or minimize the potential for the introduction or spread of STEC in wash water. **All water used for washing fresh leafy vegetables should be fit for purpose. When washing fresh leafy vegetables, biocides, when identified as necessary, should be added to wash water as per GHPs, with their levels monitored, controlled and recorded regularly during production to ensure the maintenance of effective concentrations. The characteristics of post-harvest water that may impact the efficacy of the biocidal treatments (e.g., the pH, turbidity and water hardness) should be controlled, monitored and recorded.** To avoid repetition in Clauses 26 & 27 we suggest a reword to the following: Water All water used for cooling and washing fresh leafy vegetables should be fit for purpose. If necessary, biocides should be added to wash water as per GHPs, with their levels monitored, controlled and recorded regularly during production to ensure the maintenance of effective concentrations. The characteristics of post-harvest water that may impact the efficacy of the biocidal treatments (e.g., the pH, turbidity and water hardness) should be controlled, monitored and recorded. Reason: Have as a separate clause	**New Zealand**
5. PROCESSING OPERATIONS	
El CCFH Perú sugiere que los acápites .5 Especificaciones microbiológicas y de otra índole y 5.6 Documentación y registro vayan como subtítulos diferentes en el documento y no formen parte del subtitulo 5. OPERACIONES DE ELABORACION, en razón que no se considerarían operaciones o etapas de elaboración como tal. 5. OPERACIONES DE ELABORACIÓN 5.1 Control del tiempo y la temperatura 5.2 Recortado, extracción del corazón, cortado y desmenuzado de las hortalizas de hoja verde frescas 5.3 Lavado y retirada de agua/secado de las hortalizas de hoja verde frescas cortadas 5.4 Almacenamiento en frío. 5.5 Especificaciones microbiológicas y de otra índole 5.6 Documentación y registro	**Peru**
Paragragh 29	
It is recommended that unprocessed fresh leafy vegetable handling areas be physically separated from processing areas to minimize contamination with STEC. ~~Processing, with some exceptions (e.g., cooking)~~ As most fresh leafy vegetables are not consumed cooked, processing cannot fully eliminate STEC contamination that may have occurred during primary production or packing of fresh leafy vegetables. Processors should ensure that growers, harvesters, packers, and distributors have implemented measures to minimize the contamination during primary production or packing of the fresh leafy vegetables and also during subsequent handling in accordance with the provisions in the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).	**Australia**
It is recommended that unprocessed fresh leafy vegetable handling areas be physically separated from processing areas to minimize cross contamination with STEC. Processing, with some exceptions (e.g., cooking) cannot fully eliminate STEC contamination that may have occurred during primary production of fresh leafy vegetables. Processors should ensure that growers, harvesters, packers, and distributors have implemented measures to minimize the contamination during primary production of the fresh leafy vegetables and also during subsequent handling in accordance with the provisions in the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003).	**Indonesia**

Cross contamination is more appropriate, because the separation between highly and less contaminated products is basically conducted to prevent cross contamination.	
Paragragh 30	
Paragraphs 30 and 33: these paragraphs refer to a storage temperature of less than 7°C. The EUMS note that this threshold was not included in the draft annex III on sprouts and the reference was changed to appropriate refrigerated temperatures due to a lack of scientific reference to support this temperature, according to JEMRA report MRA 43 (see paragraph 9 of CX/FH 24/54/6). Furthermore, the EUMS remind that the two former annexes on raw beef and raw milk also include a temperature threshold for storage: 7°C for raw beef (see REP23/FH Appendix III, Annex I, paras 75, 79 and 83), and 6°C for raw milk (see REP23/FH Appendix III, Annex III para 22). The EUMS would appreciate clarifications on whether or not this temperature can be included, what are the relevant scientific or regulatory sources, and how to ensure that the different annexes are consistent on this point.	**European Union**
Refer to the *General Principles of Food Hygiene* (CXC 1-1969). Time and temperature control during pre-processing storage, processing and post-processing storage is essential to prevent growth of any STEC that may be present, since an increase in numbers of the STEC population will increase the risk of consumer illnesses. A temperature below 7°C will prevent growth of STEC and is appropriate for those fresh leafy vegetables that are not susceptible to cold injury. For fresh leafy vegetables susceptible to quality damage at temperatures <7°C, the temperature should be maintained as low as possible to minimize the growth of STEC and to avoid quality damage. In order to be in line with paragraph 25 and paragraph 33, the additional statement is needed after the last sentence of paragraph 30. The additional statement that can be added is as follows: For fresh leafy vegetables susceptible to quality damage at temperatures <7°C, the temperature should be maintained as low as possible to minimize the growth of STEC and to avoid quality damage.	**Indonesia**
Refer to the *General Principles of Food Hygiene* (CXC 1-1969). Time and temperature control during pre-processing storage, processing and post-processing storage is essential to prevent growth of any STEC that may be present, since an increase in numbers of the STEC population will increase the risk of consumer illnesses. ~~A temperature below 7°C will prevent growth of STEC and is appropriate for those fresh leafy vegetables that are not susceptible to cold injury.~~ About temperatures for storage, JEMRA report says, "there is little data available concerning the growth of non-O157 STEC in leafy vegetables." Japan would like to propose not to write a specific temperature (< 7 °C) as a measure to prevent the growth of general STEC. . . . . . . JEMRA microbiological risk assessment series 44 Prevention and control of microbiological hazards in fresh fruits and vegetables Part 4: Specific commodities Annexes 1 Q6. It has been suggested that we include a recommendation for storage under 7 °C here. JEMRA, does the science support this as an appropriate temperature for preventing growth of STEC in fresh leafy vegetables? Are there other temperatures combined with time that could apply? A6. There is no convincing scientific evidence that E. coli O157:H7 can grow on leafy vegetables at temperatures lower than 7 °C. Moreover,	**Japan**

there is little data available concerning the growth of non-O157 STEC in leafy vegetables. The following references are offered in support of this assessment:	
Refer to the *General Principles of Food Hygiene* (CXC 1-1969). Time and temperature control during pre-processing storage, processing and post-processing storage is essential to prevent growth of any STEC that may be present, since an increase in numbers of the STEC population will increase the risk of consumer illness**es**. A temperature below 7°C will prevent growth of STEC and is appropriate for those fresh leafy vegetables that are not susceptible to cold injury. Kenya proposes an editorial amendment to the para by deleting 'es' from illness to read: Refer to the General Principles of Food Hygiene (CXC 1-1969). Time and temperature control during preprocessing storage, processing and post-processing storage is essential to prevent growth of any STEC that may be present, since an increase in numbers of the STEC population will increase the risk of consumer illnesses. A temperature below 7°C will prevent growth of STEC and is appropriate for those fresh leafy vegetables that are not susceptible to cold injury. Justification: The subject matter is the risk rather that the types of illnesses that can occur.	**Kenya**
5.2 Trimming, coring, cutting, and shredding of fresh leafy vegetables.	
5.2 ~~Recortado, extracción del corazón, cortado~~ Corte y ~~desmenuzado~~ deshoje de las hortalizas de hoja verde frescas Preferimos esta redacción.	**Uruguay**
Paragragh 31	
It is indicated that cutting tools must be cleaned and disinfected frequently. The EUMS find this paragraph too vague and would appreciate more details.	**European Union**
Kenya proposes an editorial amendment to the para by deletion of cutting from the statement to read: Cutting knives and other cutting tools, equipment, and any other contact surfaces, should be cleaned and disinfected frequently to minimize the potential for transfer of STEC. Justification: Editorial.	**Kenya**
5.3 Washing and removal of water/drying cut fresh leafy vegetables.	
5.3 Washing and removal of water/drying ~~cut~~ fresh cut leafy vegetables. Editorial changes	**Indonesia**
Paragragh 32	
Washing and removal of water/drying are important steps in the control of STEC for fresh-cut leafy vegetables. See Section 4.3 above and ~~section 5.2.2.5.1 of~~ Annex I on Ready-to-Eat, Fresh, Pre-Cut Fruits and Vegetables of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003). We suggest considering whether it would be best to refer to the Code of Hygienic Practice for Fresh Fruits and Vegetables (CXC 53-2003) in general instead of specific sections. The reason for this suggestion is that all specific mentions to sections will need to be updated again when the alignment of the Code of Practice for Fresh Fruits and Vegetables with the General Principles of Food Hygiene is done.	**Canada**
Kenya proposes an editorial amendment to the para by replacing 'for' with 'in' and deletion of 'see' and replace it with 'Refer to' in the statement to read:	**Kenya**

Washing and removal of water/drying are important steps in the control of STEC for for fresh-cut leafy vegetables. Refer to Section 4.3 above and section 5.2.2.5.1 of Annex I on Ready-to-Eat, Fresh, Pre-Cut Fruits and Vegetables of the Code of Hygienic Practice for Fresh Fruits and Vegetables (CXC 53-2003). Justification: Editorial amendments and for consistency	
Paragragh 33	
Paragraphs 30 and 33: these paragraphs refer to a storage temperature of less than 7°C. The EUMS note that this threshold was not included in the draft annex III on sprouts and the reference was changed to appropriate refrigerated temperatures due to a lack of scientific reference to support this temperature, according to JEMRA report MRA 43 (see paragraph 9 of CX/FH 24/54/6). Furthermore, the EUMS remind that the two former annexes on raw beef and raw milk also include a temperature threshold for storage: 7°C for raw beef (see REP23/FH Appendix III, Annex I, paras 75, 79 and 83), and 6°C for raw milk (see REP23/FH Appendix III, Annex III para 22). The EUMS would appreciate clarifications on whether or not this temperature can be included, what are the relevant scientific or regulatory sources, and how to ensure that the different annexes are consistent on this point.	**European Union**
It is recommended that fresh leafy vegetables be maintained at appropriate temperatures after cooling to minimize growth of any STEC that may be present. When cold damage is not a concern, fresh leafy vegetables should be ~~cooled to~~ stored at temperatures <7°C to prevent the growth of STEC. For fresh leafy vegetables susceptible to quality damage at temperatures <7°C, the growth of STEC should be minimized by ~~cooling to~~ storing at temperatures as low as possible while avoiding quality damage. The temperature of the cold storage should be controlled, monitored, and recorded.	**Indonesia**
It is recommended that fresh leafy vegetables be maintained at appropriate temperatures after cooling to minimize growth of any STEC that may be present. ~~-~~ Fresh~~When cold damage is not a concern, fresh~~ leafy vegetables should be cooled to ~~temperatures <7°C to~~ prevent the growth of ~~STEC. For fresh leafy vegetables susceptible to quality damage at temperatures <7°C, the growth of~~ STEC ~~should be minimized by cooling to temperatures as low as possible~~ while avoiding quality damage. The temperature of the cold storage should be controlled, monitored, and recorded. About temperatures for storage, JEMRA report says, "there is little data available concerning the growth of non-O157 STEC in leafy vegetables." Japan would like to propose not to write a specific temperature (< 7 °C) as a measure to prevent the growth of general STEC. If it is necessary to have a specific temperature, Japan proposes a footnote, only referring to O157: "A temperature <7 °C may prevent the growth of O157 in fresh leafy vegetables." . . . . . . JEMRA microbiological risk assessment series 44 Prevention and control of microbiological hazards in fresh fruits and vegetables Part 4: Specific commodities Annexes 1 Q6. It has been suggested that we include a recommendation for storage under 7 °C here. JEMRA, does the science support this as an appropriate temperature for preventing growth of STEC in fresh leafy vegetables? Are there other temperatures combined with time that could apply? A6. There is no convincing scientific evidence that E. coli O157:H7 can grow on leafy vegetables at temperatures lower than 7 °C. Moreover,	**Japan**

there is little data available concerning the growth of non-O157 STEC in leafy vegetables. The following references are offered in support of this assessment:	
United Arab Emirates proposes to modify the following statement 33:" It is recommended that fresh leafy vegetables be maintained at appropriate temperatures after cooling to minimize growth of any STEC that may be present. When cold damage is not a concern, fresh leafy vegetables should be cooled to temperatures <7°C to prevent the growth of STEC. For fresh leafy vegetables susceptible to quality damage at temperatures <7°C, the growth of STEC should be minimized by cooling to temperatures as low as possible while avoiding quality damage. The temperature of the cold storage should be controlled, monitored, and recorded". By the proposed following statement: It is recommended that fresh leafy vegetables be maintained at appropriate temperatures after cooling to minimize growth of any microbial pathogens such as STEC that may be present. When cold damage is not a concern, fresh leafy vegetables should be cooled to temperatures <7°C to prevent the growth of any microbial pathogens such as STEC. For fresh leafy vegetables susceptible to quality damage at temperatures <7°C, the growth of any microbial pathogens such as STEC should be minimized by cooling to temperatures as low as possible while avoiding quality damage. The temperature of the cold storage should be controlled, monitored, and recorded), justification for the proposed replacement: fresh leafy vegetables be maintained at appropriate temperatures after cooling to be more restricted to include minimize growth of any microbial pathogens such as STEC that may be present.	**United Arab Emirates**
5.5 Microbiological and other specifications	
Technical comment: Section 5.5 Microbiological and other specifications – Australia suggests separating STEC from indicator organism testing, perhaps through moving the indicator organism testing into a separate paragraph. It should be reinforced that the purpose of testing is to verify process control. Current drafting could be interpreted as suggesting indicator organism and STEC strain testing is for lot clearance – which the document has previously advised is of limited value. Australia suggests redrafting to clarify indicator testing of lots should occur as part of an appropriately designed system and sampling plan to evaluate and verify the effectiveness of control measures and processes. Testing should not be used primarily for the purposes of lot clearance as food safety is ensured through a system of control measures applied at appropriate points within the primary production chain through to processing and handling.	**Australia**
Paragragh 34	
~~Microbiological testing of fresh leafy vegetables and of water for primary production for STEC is currently of limited use due to difficulty in detecting STEC because of low and sporadic prevalence and when present, low numbers of the organism in fresh leafy vegetables and in water. Testing of fresh leafy vegetables for indicator microorganisms, supplemented, where appropriate, by testing for STEC strains considered to be a country's highest priority (e.g., those strains with virulence factors capable of causing severe illness or considered to cause significant illness in that country), can be a useful tool to evaluate and verify the safety of the product, the effectiveness of the control measures, and to provide information about an environment, a process or even a specific product lot when sampling plans and testing methodology are properly designed and performed. Measures to be undertaken in case of positive results for STEC (or when indicator microorganisms reach a pre-defined threshold) need to be established and defined. Refer to the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CXG 21-1997) and Principles and Guidelines for the conduct of microbiological risk management (MRM) (CAC/GL 63-2007).~~34. Microbiological testing of fresh leafy vegetables and of water for primary production for STEC is currently of limited use due to difficulty in detecting STEC because of low and sporadic prevalence and when present, low numbers of the organism in fresh leafy vegetables and in water. Testing of fresh leafy vegetables for indicator microorganisms, supplemented, where appropriate, by testing for STEC strains considered to be a country's highest priority (e.g., those strains with virulence factors capable of causing severe illness or considered to cause significant illness in that country), can be a useful tool to evaluate and verify the effectiveness of the control measures, and to provide information about an environment, or a process when sampling plans and testing methodology are properly designed and performed.	**Australia**

Measures to be undertaken in case of positive results for STEC (or when indicator microorganisms reach a pre-defined threshold) need to be established and defined. Refer to the Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods (CXG 21-1997) and Principles and Guidelines for the conduct of microbiological risk management (MRM) (CAC/GL 63-2007).	
Microbiological testing of fresh leafy vegetables and of water for primary production for STEC is currently of limited use due to difficulty in detecting STEC because of low and sporadic prevalence and when present, low numbers of the organism in fresh leafy vegetables and in water. Testing of fresh leafy vegetables for indicator microorganisms, supplemented, where appropriate, by testing for STEC strains considered to be a country's highest priority (e.g., those strains with virulence factors capable of causing severe illness or considered to cause significant illness in that country), can be a useful tool to evaluate and verify the safety of the product, the effectiveness of the control measures, and to provide information about an environment, a process or even a specific product lot when sampling plans and testing methodology are properly designed and performed. Measures to be undertaken in case of positive results for STEC (or when indicator microorganisms reach a pre-defined threshold) need to be established and defined. Refer to the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CXG 21-1997) and ~~Principles and Guidelines for the conduct of microbiological risk management (MRM)~~ *Principles and Guidelines for the conduct of microbiological risk management (MRM)* ~~(CAC/GL~~ (CXG 63-2007). Italicize the document title.	**Canada**
The EUMS consider the first sentence confusing as referring to primary production while Section 5 is on processing operations. It is therefore also not clear if the rest of the paragraph refers to primary production or not. The first sentence should be deleted or moved to Section 3. Rationale: logic structure needed.	**European Union**
Microbiological testing of fresh leafy vegetables and of water for primary production for STEC is currently of limited use due to difficulty in detecting STEC because of low and sporadic prevalence and when present, low numbers of the organism in fresh leafy vegetables and in water. Testing of fresh leafy vegetables for indicator microorganisms, supplemented, where appropriate, by testing for STEC strains considered to be a country's highest priority (e.g., those strains with virulence factors capable of causing severe illness or considered to cause significant illness in that country), can be a useful tool to evaluate and verify the safety of the product, the effectiveness of the control measures, and to provide information about an environment, a process or even a specific product lot when sampling plans and testing methodology are properly designed and performed. Measures to be undertaken in case of positive results for STEC (or when indicator microorganisms reach a pre-defined threshold) need to be established and defined. Refer to the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CXG 21-1997) and Principles and Guidelines for the conduct of microbiological risk management (MRM) (CAC/GL 63-2007). Reword - Fresh leafy vegetables and water for primary production could be tested for STEC. However, people should be aware of the limitations associated with these tests as the low and sporadic prevalence, and when present, the low numbers of STEC in fresh leafy vegetables and water could lead to negative results. Reason: This is confusing (“limited use”) and contradictory with clause 16 and the next sentence.	**New Zealand**
El CCFH Perú sugiere cambiar el subtítulo del numeral 5.5 de la siguiente manera: DICE: 5.5 Especificaciones microbiológicas y de otra índole 34. La realización de análisis microbiológicos para detectar ECTS en las hortalizas de hoja verde frescas y en el agua (…) DEBE DE DECIR:	**Peru**

5.5 Análisis microbiológicos y de otra índole Para mantener coherencia con el contenido del texto en el numeral 34.	
Paragragh 35	
It is recommended that primary production, harvesting, processing, storage, and distribution records be retained long enough to facilitate STEC illness investigation and recalls if needed. This period may significantly exceed the shelf-life of fresh leafy vegetables. Refer to ~~section 5.7 of~~ the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003) for the types of records that should be maintained by growers, harvesters and packers that may be important when investigating foodborne illness outbreaks due to STEC. We suggest considering whether it would be best to refer to the Code of Hygienic Practice for Fresh Fruits and Vegetables (CXC 53-2003) in general instead of specific sections. The reason for this suggestion is that all specific mentions to sections will need to be updated again when the alignment of the Code of Practice for Fresh Fruits and Vegetables with the General Principles of Food Hygiene is done.	**Canada**
It is recommended that primary production, harvesting, processing, storage, and distribution records be retained according to the requirements of the competent authority or long enough to facilitate STEC illness investigation and recalls if needed. This period may significantly exceed the shelf-life of fresh leafy vegetables. Refer to section 5.7 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003) for the types of records that should be maintained by growers, harvesters and packers that may be important when investigating foodborne illness outbreaks due to STEC. Some jurisdictions may require specific retention times for distribution records (e.g., 2 years in Canadian regulations). Some text is proposed.	**Canada**
The EUMS consider that the recommendation on recording at primary production should not be in this paragraph but in Section 3. Alternatively, record keeping could be in a Section other than 3 or 5. Rationale: logic structure needed. It could be placed under section 9 to consolidate all records in one place in the document. Additionally, the wording regarding the record keeping should be fully aligned between ANNEX II and IV for consistency and avoids potential confusion.	**European Union**
It is recommended that primary production, harvesting, processing, storage, and distribution records be retained long enough to facilitate STEC illness investigation and recalls if needed. This period may significantly exceed the shelf-life of fresh leafy vegetables. Refer to section 5.7 of the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CXC 53-2003) for the types of records that should be maintained by growers, harvesters and packers that may be important when investigating foodborne illness outbreaks due to STEC.36. It may be appropriate to retain microbiological test results for a longer period since this data should be used for trend analyses. Increases, often small, in the population of indicator microorganisms over time may suggest that there is an emerging issue (or issues) in the production process which may require remediation. The UK suggest the addition of a paragraph on trend analyses. The suggested text is taken from the Annex IV on Sprouts.	**United Kingdom**
11. RETAIL AND FOODSERVICE	
Paragragh 44	
thoroughly **wash fresh leafy vegetables** in accordance with section 4.3 prior to use, and For consideration. Does this advice apply to ready-to-eat, pre-washed leafy greens in sealed containers? In Canada, the advice to consumers for those products is that they don't need to be washed again.	**Canada**

Kenya proposes an editorial amendment of addition of a colon to read: Fresh leafy vegetables (intact and pre-cut) should be held at an appropriate temperature to minimize growth of STEC. Cross-contamination from or to other food items should be prevented. Food business operators serving fresh leafy vegetables for consumption without cooking to consumers should take appropriate measures to: • prevent cross-contamination, • maintain appropriate holding and storage temperature, • thoroughly wash fresh leafy vegetables in accordance with section 4.3 prior to use, and • ensure proper cleaning of tools and surfaces that may come in contact with these products. Justification: Editorial	**Kenya**
Paragragh 45	
Fresh~~When cold damage is not a concern, fresh~~ leafy vegetables should be cooled to ~~temperatures <7°C to~~ prevent the growth of ~~STEC. For fresh leafy vegetables susceptible to quality damage at temperatures <7°C, the growth of STEC should be minimized by cooling to temperatures as low as possible~~ STEC while avoiding quality damage. About temperatures for storage, JEMRA report says, "there is little data available concerning the growth of non-O157 STEC in leafy vegetables." Japan would like to propose not to write a specific temperature (< 7 °C) as a measure to prevent the growth of general STEC. If it is necessary to have a specific temperature, Japan proposes a footnote, only referring to O157: "A temperature <7 °C may prevent the growth of O157 in fresh leafy vegetables." . . . . . . JEMRA microbiological risk assessment series 44 Prevention and control of microbiological hazards in fresh fruits and vegetables Part 4: Specific commodities Annexes 1 Q6. It has been suggested that we include a recommendation for storage under 7 °C here. JEMRA, does the science support this as an appropriate temperature for preventing growth of STEC in fresh leafy vegetables? Are there other temperatures combined with time that could apply? A6. There is no convincing scientific evidence that E. coli O157:H7 can grow on leafy vegetables at temperatures lower than 7 °C. Moreover, there is little data available concerning the growth of non-O157 STEC in leafy vegetables. The following references are offered in support of this assessment:	**Japan**
Figure1: Process Flow for Fresh Leafy Vegetables	
Comment 1: Kenya proposes the inclusion of production site selection as a process step before soil preparation. Justification: Environmental factors surrounding the production site may have an effect on the safety and quality of the final product. Further, subsequent interventions would not be sufficient to fully remove STEC contamination that occurs during primary production. Comment 2: Kenya also notes that the EWG report had indicated that the word ‘dewatering’ be replaced with ‘removal of water’ which has not been effected in the flow diagram. Justification: To align with section 5.3 para 32 of the document.	**Kenya**

Uruguay sugiere informar que el diagrama es para las cultivadas en suelo. Además, se sugiere eliminar "desmenuzado" del cuadro en donde se indica "Mezclado, picado, cortado, o desmenuzado"	**Uruguay**