Joint FAO/IAEA Division Response to EC Consultation on the Evaluation of Legislation Related to the Irradiation of Food and Food Ingredients

International organizations, including the International Atomic Energy Agency (IAEA), the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), have coordinated and worked with others to develop norms and review the safety and efficacy of irradiated foods. International standards set the foundation for commerce and trade agreements. Those for both food irradiation and irradiated food can be found in the general standards and codes of practice of the Codex Alimentarius Commission and in the International Standards for Phytosanitary Measures of the International Plant Protection Convention (IPPC). The Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture has for many years provided its technical assistance to countries and coordinated research into food irradiation. Therefore I am responding to your consultation (your reference Ares(2017)4196327 - 28/08/2017) on the evaluation of European Union Directives related to the irradiation of food and food ingredients.

The overwhelming consensus is that irradiated food is safe to eat. This is evident in the many reviews by many governments and on the international level by the WHO, FAO and IAEA expert groups as well as those of the EC (i.e. the European Food Safety Authority and prior to that the Scientific Committee for Food). The caveat, as with all food processing techniques, is that the quality of the final product depends on the correct application of the process. Therefore it is imperative that the Directives 1999/2/EC and 1999/3/EC are based on the current Codex Alimentarius food standards and codes of practice as well as the phytosanitary standards of the IPPC (in view of the fact that 1999/2/EC includes the purpose of irradiation to protect plants and plant health).

Food irradiation involves exposing food to ionizing radiation in a controlled way. The Directives 1999/2/EC and 1999/3/EC are based on a very old version of codex standards. As regards the criteria of effectiveness, efficiency, coherence and relevance, Directives 1999/2/EC and 1999/3/EC need to be revised and brought up to date and it is recommended that the Directives be revised so that they meet the existing Codex Alimentarius General Standard for Irradiated Foods (CODEX STAN 106-1983, REV.1-2003) and the Codex Code of Practice for Radiation Processing of Food (CAC/RCP 19-1979 adopted 1979. Revision 2003. Editorial correction 2011). In addition any revision needs to also take note of the relevant International Standards for Phytosanitary Measures (ISPMs) of the IPPC and these are: ISPM 18 *Guidelines for the use of irradiation as a phytosanitary measure*, and ISPM 28 *Phytosanitary treatments for regulated pests* (ISPM 28 also has several annexes that provide internationally accepted phytosanitary irradiation treatments).

The key technical issue is to ensure that the irradiation facility delivers doses above the appropriate minimum dose for the particular purpose. This is especially important for applications to rid foods of organisms harmful to plants and also applications to destroy micro-organisms responsible for foodborne diseases. In contrast, Directive 1999/2/EC and 1999/3/EC focus on the maximum overall average dose that may be applied, but this is in many respects self-regulating. Too high a dose could affect product quality – and the maximum limits found in most legislation is where dose may start to negatively affect food quality in some way (rather than safety).

The Codex Standards and the standards of the IPPC focus on minimum dose and maximum dose, the two key processing parameters that can be measured directly. In contrast, Directives 1999/2 and 1999/3 use a very old concept of “maximum overall average dose”; note that overall average dose is a quantity that cannot be measured and has to be calculated.

As regards technical input into EC criteria of ensuring, effectiveness, efficiency, coherence and relevance, it is recommended that Directives 1999/2/EC and 1999/3/EC be revised in the light of current IPPC and Codex standards and codes of practice. Both IPPC and Codex standards are up-to-date and are established to help facilitate and support trade. An example of where the Directives could be improved is in the use of minimum dose and maximum dose, both directly measurable quantities used in international standards (and not to use the concept of “overall average dose” that cannot be measured directly and has to be calculated).

Carl Blackburn
Food Irradiation Specialist
Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture