

AIJN Position Paper on Pesticide Residues in Fruits, Vegetables and Juices

The use of pesticides is standard practice in the agricultural production of food products. Pesticides protect yields by limiting losses due to, competition with other weeds and from attack by insects or plant diseases etc. These chemicals have played a central role in the improved yields and the quality of the produce that we have seen over the last fifty years.

Regulation

The use of pesticides is closely regulated by authorities around the world. In Europe the EU Commission & ESFA (European Food Standards Authority) are responsible for these products use, in the US the EPA (Environmental Protection Agency) & FDA (Food and Drug Administration) are the responsible authorities and for world-wide limits and for WTO purposes the Codex Committee for Pesticide Residues (CCPR) and the JMPR (WHO/FAO Joint Expert Meeting on Pesticide Residues) are the appropriate bodies. The regulators draw up maximum residue limits (MRLs) that are considered safe in raw agricultural produce and/or processed goods. These bodies apply a science based risk assessment approach to guarantee the consumer health.

MRL setting

MRLs are set after assessing the likely short and long term toxicology of the chemicals from various animal studies. From these studies an acute reference dose (ARfD) and an acceptable daily intake (ADI) are calculated. The acute dose reflects the risk effects of short term consumption of a high level of the pesticide whereas the ADI reflects the risk factors associated with its consumption at lower levels over a lifetime.

Residue data, from supervised field trials using the Good Agricultural Practice (GAP) document, are used to assess the overall intake of a particular chemical based on a range of “model” diets. The GAP document gives details of the safe handling and use of a particular pesticide, protective equipment, dose rates and minimum withdrawal times prior to harvesting etc.

The dietary intakes, estimated from the field trials and “model” diets, are then compared to the ADI and ARfD for different consumer groups, adults, children and babies, to determine if the pesticide can be considered safe. If the intake does not pose a risk, intake values well below the ADI and ARfD, then the MRL could be adopted. However, if the intake was above these critical values the MRL would be rejected. Then a new GAP might be sort, where the pesticide usage could be reduced or a longer withdrawal period might be adopted prior to harvesting and the assessment process repeated.

There has been a general trend over the last few years to use a range pesticides that pose less threat to consumers' health and/or the environment. This has meant that within the EU in particular the approval of some of the older pesticides has been withdrawn and these materials can no longer be used. Up until 2008, the regulation of pesticide residues within the EU was a responsibility that was shared between the Commission and the Member states. The Commission was responsible for setting EU wide MRLs, but if there was not a value for a particular chemical on a crop a Member state could establish a national value if they felt the need. However, since September 2008 the competence for this area has passed fully to the Commission under Regulation (EC) No 396/2005. This new regulation simplified the position in Europe and has set harmonised MRLs across the member states. Details of the regulation etc can be found at this web address:

http://ec.europa.eu/food/plant/protection/pesticides/regulation_ec_396_2005_en.htm.

Until recently AIJN maintained a page on its website, which detailed pesticide MRL values for a range of fruit and vegetables within the EU. However, the EU commission website now provides a very easy to use and up to date source of this data and so AIJN has stopped this function. The address for this EU web site is given below:

http://ec.europa.eu/sanco_pesticides/public/index.cfm

This is an excellent site that is simple and clear to use. Data can be obtained by; either food commodity, which pesticides are permitted & their MRLs, or by chemical where a list of food products are given where this material can be used. It is a general practice that if there is no MRL set for a particular commodity then a default value of 0.010 mg/kg will apply.

The MRLs seen for fruits, vegetables and foods are generally higher than seen for drinking water. There are at least two good reason why this would be the case:

- 1) Firstly you are likely to consume more water on a daily bases than other foods or beverages. For instance it is recommended that you drink two litres of water/fluid a day, which is much more that you would normally consume of another food product. Due to this higher intake the MRLs have to be set at a lower level to ensure that there are no intake concerns of some pesticides from this source.
- 2) Secondly potable water can be specifically treated in such a way that pesticide residues would be removed so lower levels can be obtained. These approaches could not be used in processed food products, such as fruits or vegetable juices, as they would significantly affect the composition of the material and it would no longer be recognised as a juice.

MRL enforcement

There are ongoing screening programs in Member states to ensure that these MRLs are adhered to. If a product is identified with a problem then there will be a rapid alert to all states to highlight this issue. For materials coming into the community there are provisions for products to be screened at the point of entry.

The European Juice industry, under the auspices of SGF, has been proactive in this area by setting up its FRAPP program. The program was designed to obtain data on the use of pesticides in the various production regions of the world. This program allows products to be better screened for the active compounds used in the various regions.

Additionally the major producers and packers in Europe and other countries have their own screening programs. This ensures that raw materials and finished products comply with national and/or international pesticides regulations and are safe to consume.

Due to the manner in which fruits are processed, often even if some pesticide residues are present on the outsides of the fruits, only a small percentage of these materials are transferred into the juice.

Conclusions

The MRLs that are set for fruit, vegetables and foods in general have been set in such a manner that it is considered that the low levels of pesticides that maybe seen in these products pose no significant risk to health. There is a good regulatory framework within the EU to ensure the safety of pesticides used within the community. There are also screening programs in place for incoming products grown outside the EU to ensure that these conform to EU regulations and so pose no risk to consumer health.