Cumulative dietary exposure of the population of Denmark to pesticides.

We used the Hazard Index (HI) method to carry out a cumulative risk assessment after chronic dietary exposure to all monitored pesticides in fruit, vegetables and cereals for various consumer groups in Denmark. Residue data for all the pesticides were obtained from the Danish monitoring programme during the period 2004-2011. Food consumption data were obtained from DANSDA (the DANish National Survey of Diet and physical Activity) for the period 2005-2008. The calculations were made using three different models to cope with residues below the limit of reporting (LOR). We concluded that a model that included processing factors and set non-detects to ½ LOR, but limited the correction (Model 3), gave the most realistic exposure estimate. With Model 3 the HI was calculated to be 0.44 for children and 0.18 for adults, indicating that there is no risk of adverse health effects following chronic cumulative exposure to the pesticides found in fruit, vegetables and cereals on the Danish market. The HI was below 1 even for consumers who eat more than 550 g of fruit and vegetables per day, corresponding to 1/3 of the population. Choosing Danish-produced commodities whenever possible could reduce the HI by a factor of 2.