# PROGETTI DI "RICERCA CORRENTE 2017"
# RELAZIONE FINALE

## N. identificativo progetto: IZS LT 11/17 RC

**Progetto presentato da:**

**ISTITUTO ZOOPROFILATTICO SPERIMENTALE**

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**Area tematica: Sicurezza degli Alimenti**

**Titolo del progetto: Sviluppo di metodi analitici innovativi per la determinazione di contaminanti chimici negli alimenti e derivanti dai processi di lavorazione e confezionamento, con particolare riferimento a sostanze plastificanti, prodotti di degradazione dei trigliceridi e elementi chimici**

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***SUMMARY***

3-Monochloropropane-1,2-diol (3-MCPD) is the most common chemical contaminant of the group of chloropropanols. 3-MCPD can occur in food from: migration from polyamdeamine-epichlorohydrin (PAE) resin treated food contact materials, thermal processing and smoking processes. The European Community (EC) limit on 3- MCPD in acid-hydrolysed vegetable proteins and soy sauce is 0.02 mg Kg−1 in dried weight There are several methods available for the determination of 3-MCPD; the most common technique is GC coupled with mass spectrometry employing different derivatization agents. Tandem mass spectrometry (MS/MS) became a competitive technique for the determination of different contaminants but only one paper describes the detection of 3-MCPD. The aim of the project is to overcome the numerous manual steps of the indirect methods by developing an method for the determination of 3-MCPD in soyabeen sauce used for human consumption. High selective determination is achieved by high resolution HRGC-HRMSMS detection.

Bisphenols are used to improve the quality of plastic materials, but have been shown to be endocrine disruptors. Bisphenol A (BPA) the most popular representative of this group, is used for a variety of common consumer goods, such as plastic bottles including water bottles, food storage containers and sports equipment. Therefore, due to its high production volumes, BPA is considered a "pseudo-persistent" chemical, leading to its spreading and potential accumulation in a variety of environmental matrices, including food, being capable to migrate from the plastic packaging. Our aim is to develop fast and reliable methods with reasonable sensitivity for the detection of these pollutants to be more thoroughly studied with the standard methods. In general, the standard approach for identification and quantification of pollutants is based on sampling, extraction, purification and chromatographic analysis. It gives very reliable results and it shows a very high sensitivity, but it requires many steps and it is not able to give an immediate feedback on the quality of the samples. UHPLC with fluorescence detection method have been developed for determination of BPA in milk

Tinplate is widely used in food industry as a robust form of packaging, allowing minimization of headspace oxygen and sterilization of foodstuff within the hermetically sealed can, giving a long, safe, ambient shelf life with no or minimal use of preservatives. It is also extensively used for the production of beverage cans. The use of tinplate for food and beverage packaging will result in some tin dissolving into the food content. The main objective of this study was to assess the health risks associated with tin ingested via the consumption of canned tuna.

Keywords: 3-MCPD, Bisphenol A SERS Spectra, Tin