PCDD/F ANALYSIS IN BRAZIL; CASE STUDIES, PART 1, CONTINUOUS MONITORING PROGRAM OF FOOD IN BRAZIL.

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Introduction

During the last year our laboratory has been involved in at least two major projects of public concern involving the determination of PCDD/F's. One has involved the continuous monitoring program of several types of food taken from the Brazilian ports for the Ministry of Agriculture and the other has involved analysis of lime, soil samples and residues from various manufacturers and waste sites in the State of Minas Gerais for the Public Ministry (Minas Gerais) and the GreenPeace Organisation.

We would like to present preliminary results from the food study in this presentation and to discuss future monitoring studies that may be undertaken on behalf of the Government of Brazil.

A sampling program for food has been developed by the Ministry of Agriculture in Brazil involving random sampling at arrival in most of the Brazilian ports. The program aims at the analysis of samples which contain meat, milk or eggs in their composition. This study started in June 1999, after the Belgium crisis. Thus, samples from some european countries were monitored before consumption in Brazil.

Such a study is similar to those that have been in place in many European countries for a considerable time. Guidelines to tolerance levels of PCDD/F's in dairy products have been adopted in Brazil but it has been decided to establish internal guidelines from this present study.

Materials and Methods

The sampling was made based on a similar procedure for pesticide and PCB monitoring, applied in Brazil for meat, milk and honey products internally comercialized. Basically, 8 samples of 200 g are taken, resulting on a composite sample of 300 g, that is submitted to dioxin analysis. Exclusively for cheese samples, the composite sample is not prepared to avoid damaging at 8 different pieces.

The analysis of these products has involved the standard extraction, cleanup and analysis techniques for PCDD/F's that have been described previously. In summary, samples have been freeze dried and extracted with a mixture of toluene and hexane. The extracts (extract weight taken as the FAT content) have been spiked with the seventeen 13C labelled 2,3,7,8- PCDD/F congeners and then cleaned up using silica/sulphuric acid column and florisil column. The final extract was analysed by high resolution GC-MS (10000 resolution) after addition of 13C labelled recovery standards.

Detection limits and upperbound levels (minimum detection level reported if non detected) are approximately 0.07 pg/g fat for individual congeners giving a I-TEQ Upperbound of ca. 0.2 pg/g fat for the summation of all seventeen 2,3,7,8 congeners.

Results and Discussion

Table 1 shows the summary of the results obtained thus far after the analysis of ca. 60 samples from various regions of Brazil. For ease of presentation the I-TEQ values quoted are not reported as upperbound values and are based on Fat content.

Table 1 Examples of PCDD/F content in Food imported in Brazil

SAMPLE	I-TEQ pg/g FAT	DATE OF SAMPLING /ANALYIS
CHEESE	0.01	30-Jun-99
FISH OIL	4.6	01-Jul-99
CHEESE	0.05	20-Jul-99
CHEESE	0.46	20-Jul-99
CHOCOLATE	0.04	19-Aug-99
MILK	0.07	13-Aug-99
CHEESE	0.02	05-Out-99
TRIPES	0.8	05-Nov-99

Conclusions

It has been shown that the continuous monitoring of the PCDD/F content of food coming from other countries for internal consumption was performed with success. The program is now being evaluated for application in other food materials.

Acknowledgements

We gratefully acknowledge the cooperation provided by the Ministry of Agriculture (Brazil).

References

Instrução Normativa 003 , Federal Ministry of Agriculture, Brazil