

# Monitoring and control of mycotoxins in foodstuffs in Cyprus 1997-2006

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**AOAC INTERNATIONAL WORKSHOP**  
*“Foods to Dye for – Contaminants – sampling, analysis, legal limits”*  
*Monday 6th – Tuesday 7th November, 2006, Limassol, Cyprus*



# Environmental & Other Food Contamination and Natural Toxins Lab

is one of the eleven food laboratories of the State General Laboratory

- ❖ **Official control Laboratory** for surveillance, monitoring and applied research in the field of food contaminants
- ❖ Designated as the Cyprus **National Reference Laboratory (NRL)** for **Mycotoxins, PAHs and heavy metals**
- ❖ **Accredited** since 2002 according to ISO/IEC 17025:2005 by the Greek Accreditation Body ESYD in five methods in the field of contaminants, including mycotoxins

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# QUALITY CONTROL

➤ In above, the laboratory participates in several *collaborative trials* and *PT rounds*

FAPAS, CHEK, IMEP, CRL-ISS  
with satisfactory results

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# Equipment

The laboratory is equipped with  
high technology instruments:

**HPLCs with various detectors**

**GF-AAS**

**ICP, ICP-MS, GC-MS, and other equipments**

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# Official sampling, inspection and enforcement

is performed by the:

- *Medical and Public Health Services* ( MPHS) of the Ministry of Health and the
- *Veterinary Services* (VS) of the Ministry of Agriculture, Natural Veterinary Services (VS) Resources and Environment, for **raw** and some **processed animal origin foodstuffs**

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# Programmes

**Sampling, Monitoring and Control** Programmes are planned annually and contracted at the beginning of each year (since 1993) in cooperation between the SGL and the sampling authorities.

The samples, locally produced and imported, are collected according to a specific sampling plan, based on the relevant EU requirements, at **critical control points** (HACCP approach) such as:

**import , primary storage, premisses,  
processing places, market**

# Analytical methods

*IAC clean up*

*followed by HPLC/fluorecence or UV/PDA detection*

- AOAC 991.31 for **Aflatoxins B1, B2, G1 and G2**
- AOAC 2000.08 (first action), for **Aflatoxin M1**
- Journal of AOAC International , Vol. 84, No. 6, p. 1818 – 1827 for **OTA**
- Journal of AOAC International , Vol. 84, No. 6, p. 1828 – 1837 for **Fumonisin B1&B2**
- Central Science Laboratory (2001), **Zearalenone** Collaborative trial 130
- Central Science Laboratory (2001), **Deoxinivalenone** Collaborative trial 130
- CEN N 320 for **Patulin** determination

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# RESULTS & DISCUSSION

The evaluation of the results until May 2004 was carried out according to Cyprus legislation and then according to the EU legislation.

The control includes **inspection, sampling, retainment, analysis, and destruction or re-export** to the country of origin of lots with AFs levels above MLs.

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## □ Aflatoxins

Most of the examined samples ( **nuts, cereals, dried fruit, spices** ) were within the relevant EU levels for aflatoxins, except for some samples, especially the imported ones such as **peanuts, pistachios** where were found to be above the relevant EU MLs (total AFs = 4 µg/kg and AF B<sub>1</sub> = 2 µg/kg).

□ Concerning aflatoxin M1 only a small percentage of the examine samples ( **milk** ) were found to be positive.

□ **Ochratoxin A**

(**cereals, raisins, wine , coffee and baby food**),  
were found to be positive,  
with **wine** samples to be 100% positive.

□ **Patulin**

in **apple juice & puree**, and **baby food**  
ranged from non detectable (ND) to 13 ppb

## □ *Fusarium* Toxins

(Deoxynivalenol, Zearalenone, Fumonisin FB<sub>1</sub> & FB<sub>2</sub>)

ranged from ND to 113 ppb, at least for the samples examined.

*The limited number of analysed samples do not allow us to reach in a conclusion about the overall occurrence of fusarium toxins in foodstuffs.*

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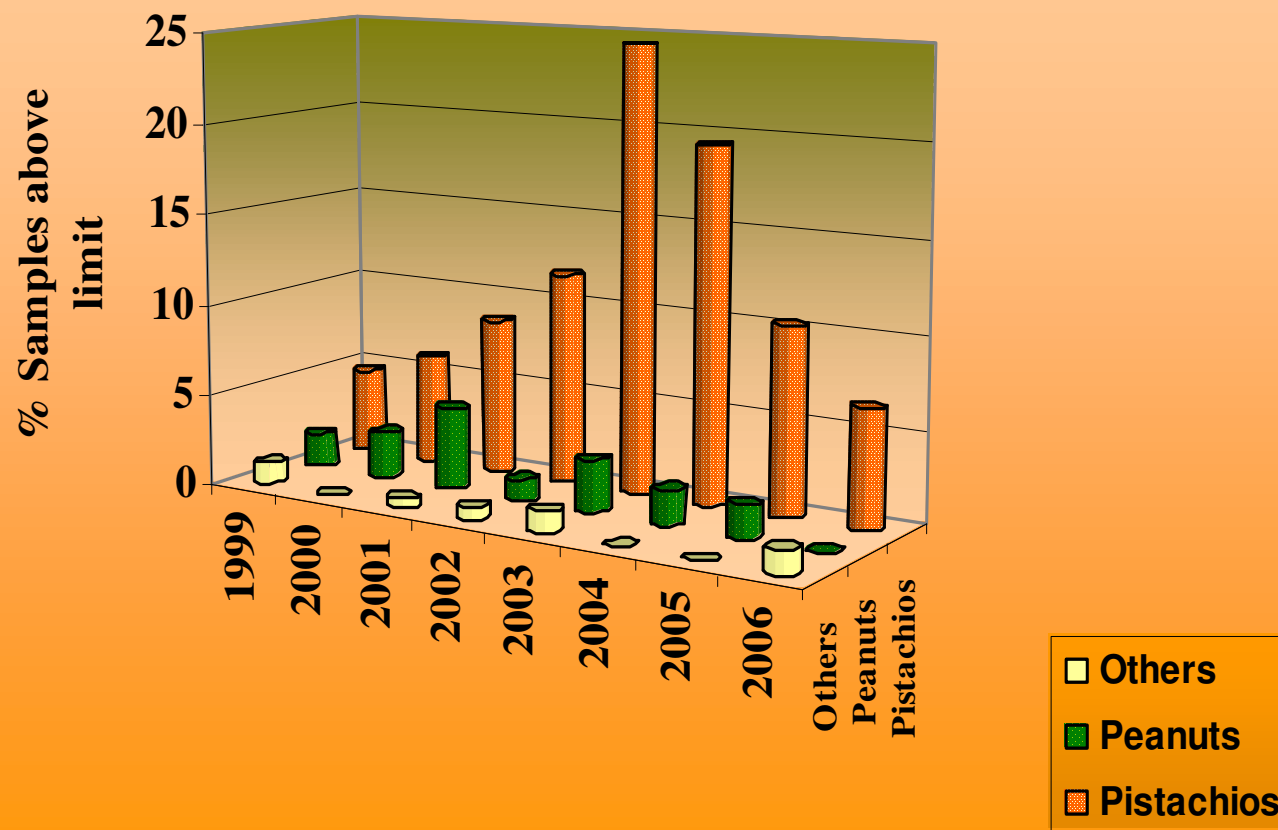


# CONCLUSIONS

- The results indicate **the effectiveness** of **monitoring**, as well as the **need** for constant surveillance and control especially, at **critical control points**, in order to prevent unfit products entering the Cyprus and EU market.
- The control must be expanded more systematically to cover all the **fusarium toxins**.

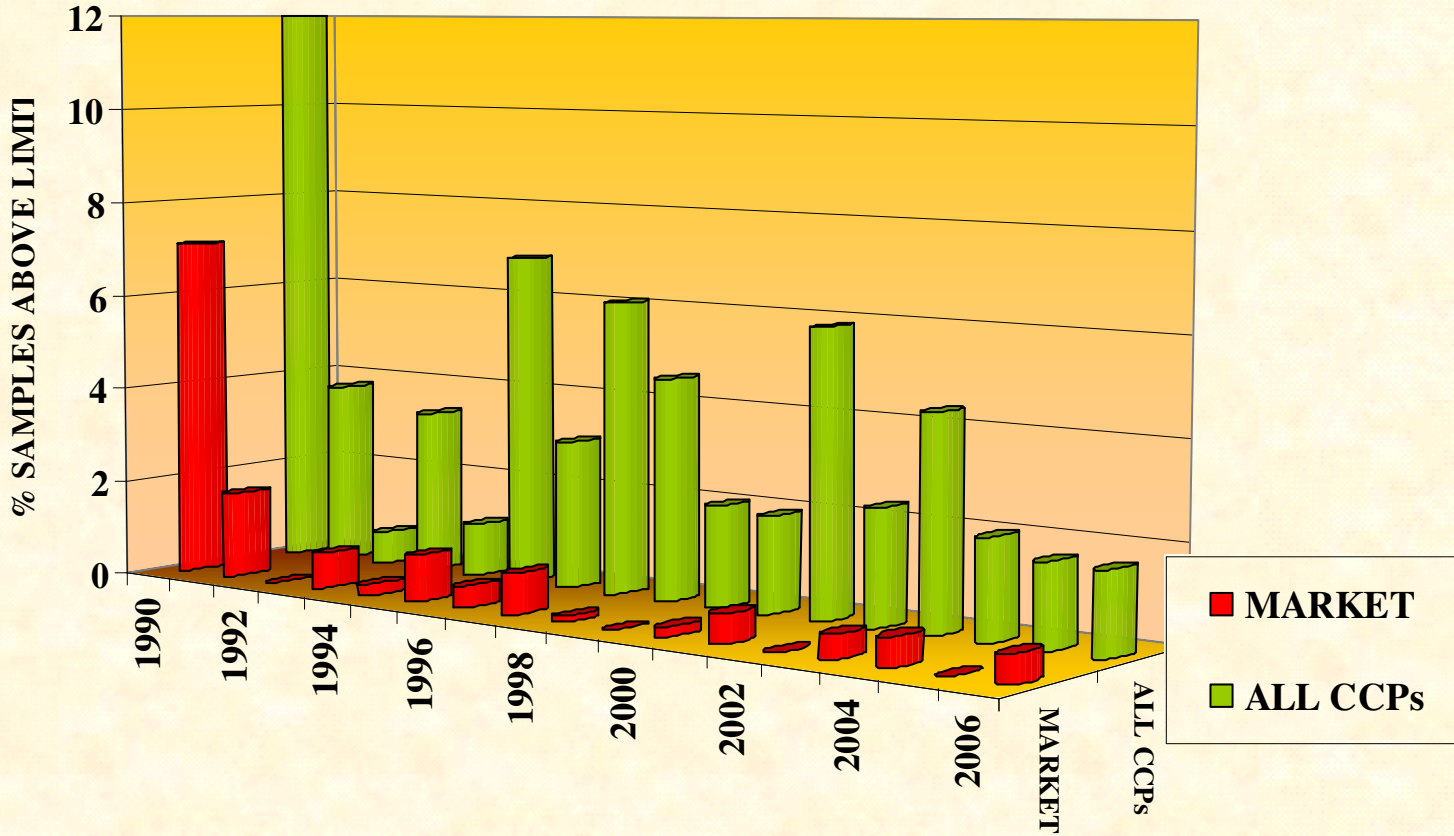
THANK YOU FOR YOUR  
ATTENTION

## Aflatoxins control of peanuts, pistachios and other foodstuffs in Cyprus, 1999-2006



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## MONITORING PROGRAMME OF AFLATOXIN (HACCP) IN CYPRUS 1990-2006

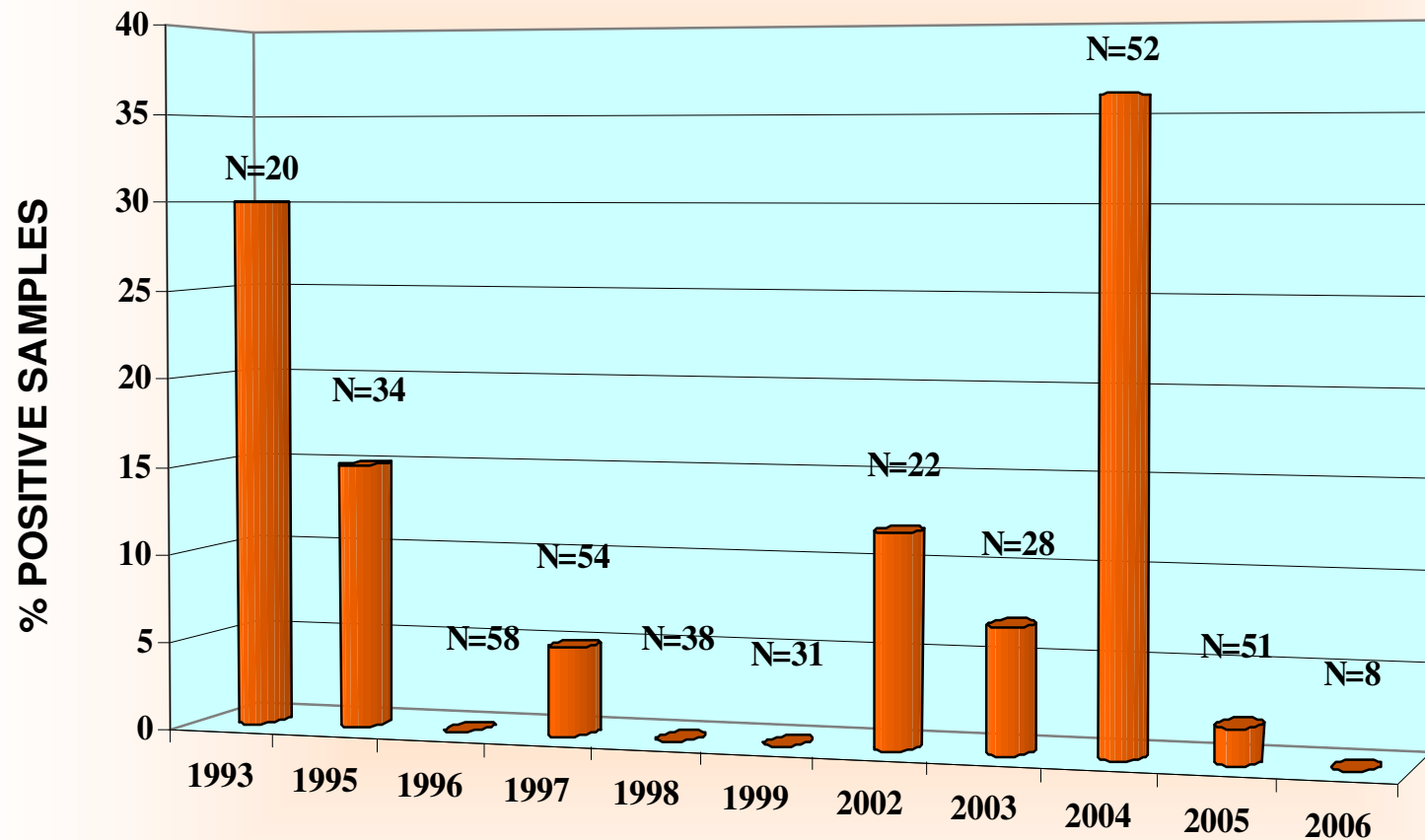


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[BACK](#)



# INCIDENCE OF AFLATOXIN M1 IN MILK IN CYPRUS 1993-2006

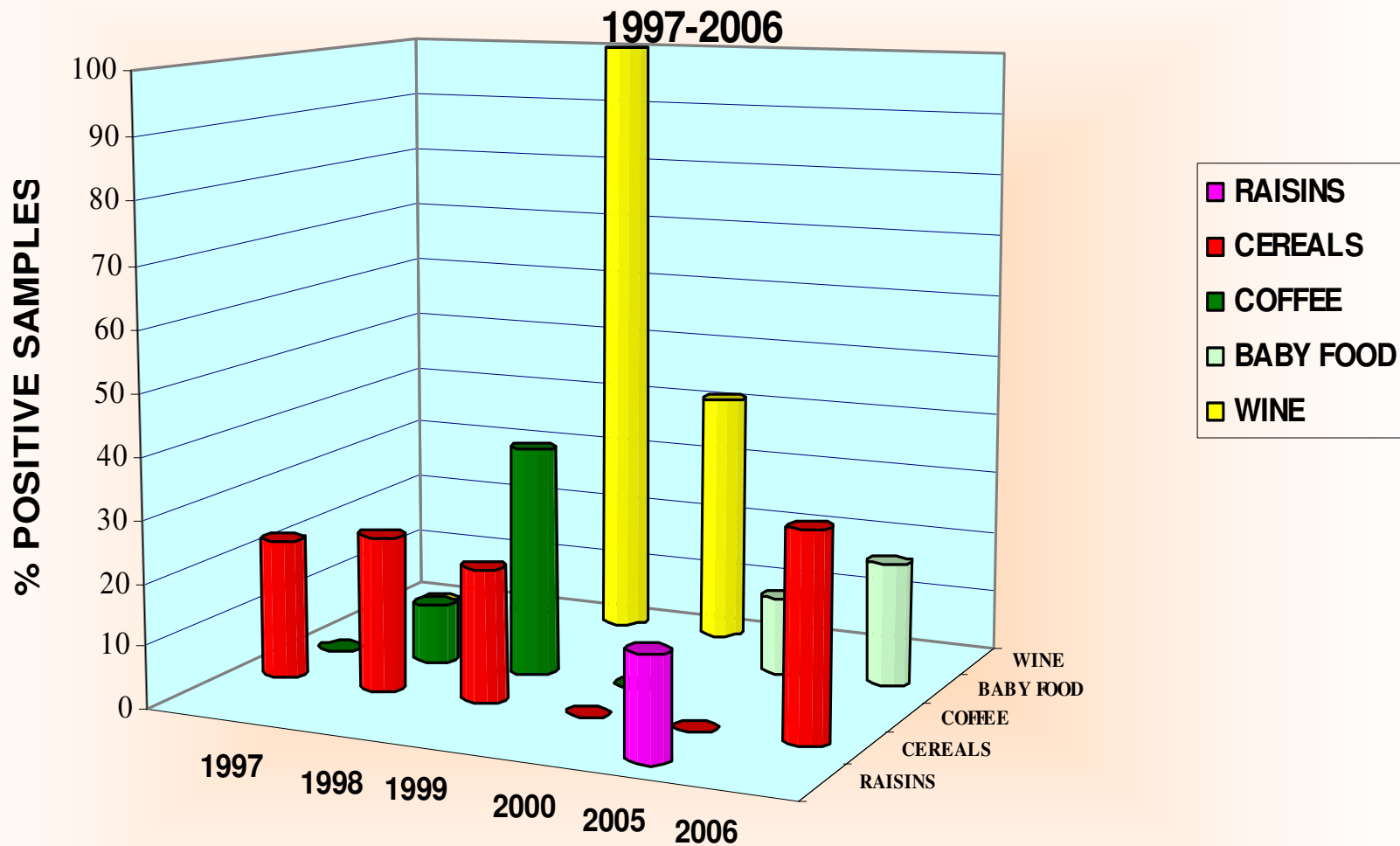


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# INCIDENCE OF OCHRATOXIN A IN FOODSTUFFS IN CYPRUS



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[BACK](#)

