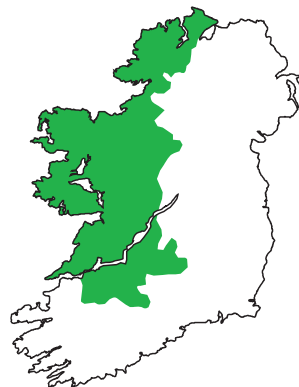




Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Western Region
Public Analyst's Laboratory
Réigiún an Iarthair
Saotharlann an Anailisí Phoiblí

Annual Report 2009
Tuarascáil bhliantúil 2009



FOR YEAR ENDED 31ST DECEMBER, 2009

ACKNOWLEDGEMENTS

I am pleased to present this report outlining the work performed in this laboratory during the year 2009. The planned work schedules were all completed successfully and the laboratory's scope of accreditation was also extended.

In common with previous years, a further staff reduction was experienced by the laboratory as a result of the retirement of Deputy Public Analyst Dr. Anne Bruzzi and her non replacement on foot of the recruitment embargo.

I would like to commend the hard work and dedication demonstrated by the laboratory staff during the year in the face of increased pressure and shrinking resources.



Rory Mannion
Public Analyst

July 2010

This report is also available on the HSE website (www.hse.ie) in both Irish and English.

	CONTENTS	PAGE
	Acknowledgements	ii
	INTRODUCTION:	1
1.	Scope of the Laboratory	1
1.1	Finance	1
1.2	Laboratory Reviews	1
1.3	Workload	2
1.4		
2.	FOOD:	2
2.1	Service Provided	2
2.2	Inspection and Surveillance of Food	2
2.3	Food Safety Laboratory Service – Developments and Reviews	3
2.4	Food Testing (Chemical) Results	3
2.5	Food Contaminants	6
2.6	Nutrition /Composition, Additives /Labelling, etc.	11
2.7	Complaint Samples	16
2.8	Food Alerts (RASFF) and Hazard/Contamination Reports	16
3.	WATERS/EFFLUENTS:	17
3.1	Introduction	17
3.2	Sample sources 2009	17
3.3	Fluoridation of Public Water Supplies	17
3.4	Lead	18
3.5	Volatile Organic Compounds	18
3.6	Aluminium	18
3.7	Arsenic	19
3.8	Haemodialysis Water	19
3.9	Analytical Developments	19
3.10	Private Samples	19
4.	AIR POLLUTION MONITORING:	19
4.1	European Legislation	19
4.2	National Legislation	20
4.3	Laboratory Results	20
5.	PHARMACEUTICALS/TOXICOLOGY LABORATORY:	21
5.1	Pharmaceutical Laboratory	21
5.2	Toxicology Laboratory	22
6	COSMETICS:	23
6.1	Introduction	23
6.2	Cosmetic Legislation and EU control systems	23
6.3	Official control and Enforcement of Cosmetics Legislation in Ireland	23
6.4	Results for 2009	24
6.5	Summary and Recommendations.....	27
7.	MISCELLANEOUS TESTING:	27
8.	LABORATORY ACCREDITATION:	28
8.1	Accreditation	28
8.2	Irish National Accreditation Board (INAB) Surveillance Visit	28
8.3	Proficiency Testing	28
9.	STAFF TRAINING:	29
10.	MEETINGS/COMMITTEES:	30
11.	INFORMATION AND COMMUNICATION TECHNOLOGY:	30
Appendix 1	Food Sampling/Analysis Programme 2009	31
Appendix 2	Food Categories Table of Results – Infringements etc.	33
Appendix 3	Principal Official Surveillance of Foodstuffs	34
Appendix 4	Annual Results 1999 to 2009 – Food Contaminants etc.	35
Appendix 5	Fluoride Results	36
Appendix 6	Air Pollution Tables & PM ₁₀ Results for 2009	39
Appendix 7	Staff	41

I. INTRODUCTION

I.1 Scope of the laboratory

This laboratory is one of three Public Analyst's Laboratories in the Republic of Ireland. The other two are located in Dublin and Cork. The laboratories play a key role in the protection of public health by providing an independent analytical and advisory service to the general public and various government agencies.

The service areas provided by this laboratory are as follows:

- Food
- Water
- Pharmaceuticals and Toxicology
- Air Monitoring
- Cosmetics

Food samples are received primarily from Environmental Health officers (EHOs) as part of agreed surveillance programmes between the Food Safety Authority of Ireland (FSAI), the laboratory and the EHOs.

Samples are also received from the general public, local industry and other government agencies.

Most of the waters received by the laboratory are drinking waters. These are received from EHOs on behalf of Local Authorities, directly from Local Authorities, from the general public and from local industry.

Pharmaceutical samples are received from the Irish Medicines Board (IMB) on foot of a contract between the laboratory and the IMB.

Hospital Pathologists, Physicians, Veterinary Surgeons and the general public submit samples for toxicological analysis.

An air pollution monitoring service is provided by the laboratory to Galway City Council.

Samples of cosmetics are received from EHOs as part of an agreed surveillance program. Enforcement and complaint samples are also received.



I.2 Finance

The laboratory receives a budget to cover both pay and non pay costs for the year. The budget received for the year 2009 was €3.123 million. Income received for the year was €234,608. The laboratory operated within budget.

I.3 Laboratory Reviews (See 2.3)

The three Public Analyst's Laboratories (PALs) in conjunction with seven Official Food Microbiology Laboratories (OFMLs) have been the subject of two separate reviews which reported in 2004 and 2008 respectively. Both reviews contained a number of important recommendations. Thus far these recommendations have not been implemented and there is no indication of a formal implementation process commencing.

This is regrettable, since a lot of time and effort were devoted to these reviews and the service would benefit from the implementation of the recommendations.

A major review of clinical laboratories in Ireland was undertaken by Teamwork Management Services. Their report contains detailed recommendations for the development and re-organisation of clinical laboratory services in Ireland.

The HSE has put a governance structure in place to oversee the re-structuring of the clinical laboratories using the TEAMWORK report as a starting point.

This includes a Laboratory Services Modernisation Group and a Cold Laboratory Procurement/Technical

group. It was agreed at a meeting of the Laboratory Services Modernisation Group in March 2009 that the PALs and OFMLs would come under the scope of this review.

A preliminary meeting took place in May 2009 between the chairman of the Modernisation group, the Public Analysts and representatives of the OFMLs. It is unclear how, if at all, the PALs and OFMLs might fit into a new model of service delivery.

A further meeting is being scheduled for later in 2010 to consider presentations from the laboratories.

1.4 Workload

The number of samples tested during the year is as follows.

Foods	3,054
Waters	9,735
Pharmaceuticals	97
Toxicology	249
Cosmetics	334
Air-Monitoring	1,095
Miscellaneous	17
Total	14,581

2. FOOD

2.1 Service Provided

Food in our region (HSE Western Area) is monitored officially for chemical safety*, quality and for legislative compliance. Some national surveillance is also performed. The Environmental Health Officers (EHOs) of the HSE, and the Food Safety Authority of Ireland (FSAI, www.fsai.ie) are our main clients, -see also Table 1 - sample sources. Testing is performed for contaminants, additives, allergens, nutrients, composition and labelling etc. The service provided includes programmed surveillance and also ad-hoc testing (food complaints and alerts, 'inspection' samples etc.) as required.

Private Food Complaints and Food Export certification samples are also tested for industry and the public. Some applied research projects are carried out in conjunction with safefood, www.safefood.eu.

The authorised officers (EHOs), and FSAI as appropriate, deal with the incidents of detected non-compliances in samples.

**see Report of the Food Microbiology laboratory, UHG for a summary of the results of Microbiological testing of foods in HSE West area.*



2.2 Inspection and Surveillance of Food

Protecting the Food Supply is important for reasons of Food Safety, ensuring Legislative Compliance and Facilitating Trade. The principal mechanism of ensuring food safety lies in the preventive food safety measures (Hazard Analysis Critical Control Points {HACCP}, Hygiene etc.), taken by the food industry (manufacturers, importers, wholesalers, caterers and retailers).

HSE's main activity in food safety has been in legislative enforcement, including:

- **Monitoring the overall food safety systems** and operations (HACCP, Hygiene etc.) in place in the food industry. This is performed through inspection and audit, and monitoring for compliance with general and specific legislative requirements, in particular food hygiene provisions;
- **Monitoring the safety and quality of food through laboratory analysis.** Samples are monitored for compliance with specific legislative standards of safety and with general safety and quality/compositional criteria.

The above two food safety mechanisms are complimentary and synergistic.

2.3 Food Safety Laboratory Service – Developments & Reviews etc.

A Food Safety Laboratory Service (FSLs) is provided by the HSE's 7 Official Food Microbiology and 3 Public Analysts' Laboratories. In July 2004 a report entitled: "A Strategic Developmental Review of Health Board Food Control Laboratories (safefood 2004)" was published. <http://www.safefood.eu/Global/Publications/Research%20reports/StrategicDevelopmentReviewOfHealthBoardFoodControlLaboratories.pdf?epslanguage=en>

The Report contains 16 recommendations including, inter alia: combining the Labs into a unified multi-sited Food Safety Laboratory Service. The recommendations have yet to be implemented, although some aspects of the report are dealt with by the HSE National Review of Public Analysts' Laboratories and Public Health Microbiology Laboratories (see Section 1.3 above).

A third Review relevant to this laboratory is being performed by the (HSE) Laboratory Services Modernisation Group. This group was set up following the Teamwork Report of 2008 into modernising the Irish clinical laboratory service. http://hse.ie/eng/Publications/services/Hospitals/Teamwork_report_Implementing_a_new_system_of_service_delivery_for_laboratory_medicine_services.pdf

Separately, a Review of Food Sampling in the HSE was progressed in 2009, as was agreed in the Service Contract between FSAI and HSE. The HSE Food Laboratories and Environmental Health Officers

published position papers and a set of Joint Recommendations in 2009. FSAI is also participating in the review. A key development from this review is the national and regional coordination of sampling, with a move to increased sampling from earlier stages (wholesale, import etc.) in the food chain.

A further development within the Public Analysts' Service is that the 3 laboratories are consolidating, on a more formal basis, the allocation of testing specialisations and core testing functions developed over the past few years.

2.4 Food Testing (Chemical) Results for 2009

2.4.1 Regional Chemical Surveillance Programme 2009

Nationally coordinated, Regional Food Surveillance (Chemical) Programmes are produced between the HSE and FSAI, drawing largely on risk-based priorities identified by FSAI and regional sampling needs within HSE. The Programmes are ratified by the Regional Food Committee, including the EHO services and Laboratories, in partnership with FSAI.

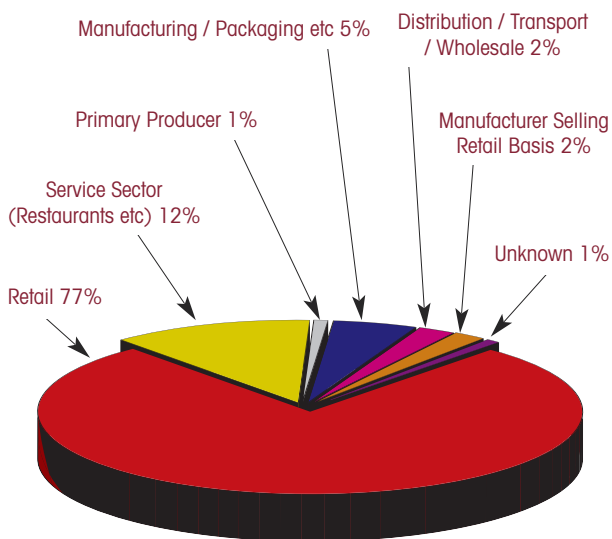
The production of Ireland's Multi-Annual National Control Plan (MANCP) is coordinated by FSAI and it includes the Food Surveillance Programmes.

HSE West's Chemical Testing Programme for 2009 is outlined in Appendix I.



2.4.2 Results for 2009

All of the programmed surveys for 2009 were carried out; a total of 3,054 samples were received. The Figure below indicates the 'stage' at which Western Region EHO samples (excluding complaints) were taken in 2009. The majority of samples (77%) were taken at retail level.



2.4.3 Statistics for 2009

The region covered by the laboratory, i.e. HSE West, has a population of 1,010,690 (2006 census) and the number of food samples tested in 2009 was 3,054. The samples consisted of 100 complaints [see 2.7] and 2,954 others. Of the 2,954 above, adverse reports (i.e. test results indicating breaches of Irish Food Law Standards) were issued on 190 (6.4 %); this figure of 6.4 % compares to the figures for previous years:

Adverse Reports (as % of samples analysed, excluding complaints)

Year	%
2009	6.4
2008	7.4
2007	8.3
2006	5.4
2005	4.7
2004	5.0
2003	4.5
2002	5.1
2001	4.2
2000	5.1

Of the 190 breaches, 123 were due to labelling deficiencies, largely in samples from ethnic, retail premises. The categories of foodstuffs and infringements for complaints and other samples received from HSE West and the General Public are summarised in Appendix 2. Tables 1 and 2 below summarise the work for 2009 according to the sampling region and source.

Table 1: Food Sample Sources (2009)

Submitted by / (Sample Type)	No. of Samples	No. on which Adverse Reports were issued
Environmental Health Officers (HSE West)		
Informal Routine (Sampling Programme)	1,535	130
Public (Food Complaints via EHOs)	86	39
Inspection samples (non-programmed)	65	20
Follow-up samples (non-programmed)	52	14
General Public		
Complaints	14	11
Others	110	2
Food Safety Authority of Ireland	299	5
<i>safefood</i> survey in conjunction with HSE EHS and Northern Ireland EHS	258	17
HSE Public Health Medicine	19	0
HSE Dietetics Service	25	0
Sea Fisheries Protection Agency & BIP	249	2
DAFF & Local Authority Veterinary Service	37	1
Laboratory QA & Method Development etc.	115	0
Export Certification	190	0
OVERALL TOTAL	3,054	240

Table 2: HSE West Food Sample Sources (2009)

Community Care County Area E.H.O. Service (all sample types)	Number of Samples Submitted (excluding complaints and <i>safefood</i> samples)	Number per 1,000 population*
Galway	294	1.27
Mayo	162	1.31
Roscommon	119	2.03
Clare	223	2.01
Limerick	287	2.12
North Tipperary/East Limerick	164	1.43
Donegal	209	1.42
Sligo/Leitrim/West Cavan	194	2.13

* Based on 2006 census

2.4.4 Overall Summary of Results and Food Quality 2009

A wide range of 'surveillance' for contaminants, additives, labelling etc. and public health nutrition testing (salt, nutritional claims, folic acid etc.) was carried out in 2009. Results are reported by test parameter in sections 2.5 to 2.7 below, with summaries given in Appendices 2 and 4. As in previous years, some instances of food contamination were found and these were dealt with by the EHOs and FSAI as appropriate.

Overall, a reduced level of contaminated samples was found in 2009. Also, the number of submitted food complaint samples remains decreased, compared to previous years (see 2.7 below). The number of Hazard/Contamination Reports (see 2.8) issued was 14.

It is reassuring that the overall results reported here for 2009 indicate a relatively low level of chemical contamination, and a generally high quality of food in our region.

Note: Ireland has a multi-agency system in place for official surveillance of food, - see Appendix 3 for an outline. To obtain an overall picture of the safety and hygiene of our food supply, see Annual Reports of FSAI, - www.fsai.ie and those of the agencies (Dept. of Agriculture, Fisheries & Food; Dept. of Communications Energy and Natural Resources; Local Authorities; HSE etc...) involved in the official control of food.

2.5 Food Contaminants

2.5.1 General

Chemical contaminants and residues in foods are monitored to help ensure food safety & quality and also legislative compliance; they may be classified broadly as:

- Natural Toxins (Fungal, Algal, Bacterial, Natural Plant & Animal Toxins etc.);
- Industrial/Environmental contaminants (Heavy Metals, Dioxins, Melamine etc.);
- Food Processing/Packaging contaminants (Acrylamide, Benzo-[a]-pyrene, Solvents, Bis-phenol A, etc.);
- Allergens (e.g. Peanut protein, Gluten, Egg protein, Sulphites etc.);
- Plant and Animal Treatment Residues (Pesticides, Antibiotics etc.).

Contaminants'/residues' surveillance in Ireland is nationally coordinated. Many contaminants/residues are monitored nationally as specialisations in single

laboratories. The testing described in this report reflects the contaminant priorities identified by HSE West and FSAI.

Notes:

(i) Other Official Agencies and FSAI (see Appendix 3 and www.fsai.ie) also produce reports on contaminants & residues in food. The Ashtown Food Research Centre (Teagasc) produces an annual National Food Residue Database for Ireland - (see <http://nfrd.teagasc.ie/>)

(ii) Data on microbiological contamination of food is to be found in the reports of the Official Food Microbiology Laboratories, in reports of other Departments/Agencies (see Appendix 3) and in FSAI (www.fsai.ie) reports.

(iii) FSAI produces regular, updated overviews of EU and Irish Food Contaminants' Legislation.



2.5.2 Food Contaminants – EC Regulation 1881/2006 (& 1126/2007, amending)

EC Regulation 1881/2006 sets limits for a range of chemical contaminants in food. Relevant testing performed here in 2009 is summarised in Table 3.

Table 3: Food Contaminants – EC Regulation 1881/2006 - Principal Testing in 2009

Contaminant	Limits	Sample Types	Total	Complying	Non-complying
Aflatoxins ¹ (B ₁ , B ₂ , G ₁ , G ₂)	2.0µg/kg (B ₁) 4.0µg/kg (Total)	Maize & Maize products	33	33	0
		Peanut Butter	30	30	0
		Nuts	18	15	3
		Rice & Rice flour	15	15	0
		Nut products	14	14	0
		Others	5	5	0
Sub-total Aflatoxins			115	112	3
Fumonisin ² (B ₁ , B ₂)	1,000µg/kg	Maize & Maize products	27	24	3
	800µg/kg	Maize, breakfast cereals/snacks	12	12	0
		Rice & Rice flour	1	1	0
Sub-total Fumonisin			40	37	3
Lead ³ (Pb)	0.8mg/dm ² or 4.0mg/L	Ceramic tableware	45	41	4
	0.3 to 1.5mg/kg	Fish & Fishery products	47	47	0
	0.05mg/kg	Beverage bases	81	81	0
	0.020mg/kg	Infant formulae/Follow-on formulae	20	20	0
	10.0µg/L	Water	53	53	0
	0.20mg/kg	Rice	20	20	0
	0.20 mg/kg (cereals)	Flour, seeds, etc.	54	54	0
	-	Coffee	40	40	0
	-	Salad creams/tartare sauces	21	21	0
	-	Dried Potatoes / prepared potato products	21	21	0
-	Miscellaneous	20	20	0	
Sub-total Lead (Pb)			422	418	4
Cadmium ³ (Cd)	0.07mg/dm ² or 0.3mg/L	Ceramic tableware	45	44	1
	0.05 to 1.0mg/kg	Fish & Fishery products	47	47	0
	-	Beverage bases	81	81	0
	-	Infant formulae/Follow-on formula	20	20	0
	5.0µg/L	Water	53	53	0
	0.20mg/kg	Rice	20	20	0
	0.02mg/kg (cereals)	Flour, seeds, cereals etc.	54	54	0
	-	Coffee	40	40	0
	-	Salad creams/tartare sauces	21	21	0
	-	Dried Potatoes / prepared potato products	21	21	0
-	Miscellaneous	13	13	0	
Sub-total Cadmium (Cd)			415	414	1
Mercury ³ (Hg)	0.50 to 1.0mg/kg	Fish & Fishery products	169	165	4
Sub-total Mercury (Hg)			169	165	4
Benzo-[a]-pyrene ⁴	2.0µg/kg (Oil)	Food & Oil Supplements etc.	30	30	0
	2.0µg/kg	Canned Fish in <u>Oil</u>	30	30	0
	2.0µg/kg; 5.0µg/kg	Fish	5	5	0
Sub-total Benzo-[a]-pyrene			65	65	0

Please see notes on next page

¹ Aflatoxins are fungal toxins which may contaminate certain foods (nuts, cereals etc.), particularly from the tropics/sub-tropics.

² Fumonisin is a fungal toxin which occasionally contaminates foods such as maize and maize products.

³ For data on EU exposure to Heavy Metals (As, Cd, Pb & Hg) see EU SCOOP Report
http://europa.eu.int/comm/food/food/chemicalsafety/contaminants/scoop_3-211_heavy_metals_report_en.pdf

⁴ Benzo-[a]-pyrene is a polycyclic aromatic hydrocarbon (PAH) which may contaminate smoked/burned foods. See EU PAH report at
http://ec.europa.eu/food/food/chemicalsafety/contaminants/scoop_3-2-12_final_report_pah_en.pdf

Aflatoxin B₁ is a genotoxic carcinogen which may contaminate nuts, cereals, dried fruits etc. Port-level detection of **Aflatoxins** in imported foods produces many EU Rapid Alert Notifications (see Section 2.8). In conjunction with FSAI, HSE's sampling emphasis has recently focussed on port-level, bulk produce, with testing performed by the Public Analyst's Laboratory in Dublin. There has been an overall reduction in HSE West sample numbers in 2009 and an emphasis on retail-level, homogeneous samples (flours, pastes etc.). In 2009, 3 of the 115 samples (2.6 %) tested here had excessive Aflatoxins. New, higher maximum levels for aflatoxins in certain foodstuffs (tree nuts etc.) come into force from March 2010 (Commission Regulation EU No. 165/2010 amending Regulation EC No. 1881/2006).

Efforts, including legislation, to control exposure to **Heavy Metals** have reduced recent human intake. Testing for Lead and Cadmium was carried out in 2009 on 422 samples, representing a wide variety of foodstuffs (see Table 3); only four samples*, ceramic tableware products, were found excessive for Lead (Pb), and one for Cadmium (Cd).

Ceramic articles intended to come into contact with Foodstuffs have maximum levels set for Lead and Cadmium as per Council Directive 84/500/EC. A Food Hazard report was issued from this laboratory for the ceramic samples; a RASFF Alert and product withdrawal ensued.

*Two programmed samples and two follow-up samples of the products.

Seven casein samples were submitted for Lead analysis by the Department of Agriculture & Food in 2009; all 7 were designated as satisfactory.

89 miscellaneous bottled water samples were screened (by ICP-MS) for 12 metallic contaminants, and none were found to be excessive.

Benzo-[a]-pyrene, a genotoxic carcinogen, may be formed in smoked/burned foods. Excessive levels were not found in any of the 65 samples tested in 2009, representing a decrease over recent years. An elevated level of Benzo-[a]-pyrene was detected in 2 food supplements, Ginseng capsules (11.5µg/kg) and a Propolis liquid (28µg/kg). At present there is no legislative limit for food supplements, but the expected exposure from the above samples is not likely to be significant as intakes are generally low.



2.5.3 Other Food Contaminants etc.

Table 4 below summarises testing for contaminants etc. other than those covered in EC Regulation No. 1881/2006, as performed here in 2009.

Table 4: Other Food Contaminants/Residues: Summary of Results for 2009

Contaminant	Limits	Sample Types	Total	Complying	Non-complying
Marine Biotoxins ¹	EU Decisions 2002/225/EC & 2002/226/EC	See Below	See Below	See Below	See Below
DSP Toxins ²	160 µg/kg	Mussels, Oysters, Clams	22	21	1
AZA Toxins ³	160 µg/kg	Mussels, Oysters, Clams	23	22	1
ASP Toxins ⁴	20 mg/kg	As above	30	30	0
Gluten (EHO sampling) ⁵	200 ppm*	Rendered ⁶ Gluten-free foods	3	3	0
	20 ppm*	Naturally Gluten-free foods	83	83	0
Gluten (<i>safefood</i> & HSE EHS survey)	200 ppm	Prepared meals. 200ppm limit applied to all	258	241	17
Gluten (private samples)	200 ppm*	Rendered ⁶ Gluten-free foods	0	0	0
	20 ppm*	Naturally Gluten-free foods	50	50	0
Benzene	10 µg/L (FSAI-WHO drinking water limit)	Non-alcoholic Drinks (57) & Alcoholic Drink (1)	58	58	0
Histamine/ Biogenic Amines ⁷	200mg/kg (EC Reg 1441/2007)	Scombroid Fish etc. (Tuna, Mackerel...)	320	305	15
Arsenic (As)	0.5 mg/kg (SI 44 of 1972)	Beverage Bases	51	51	0
Anti-bacterial Substances (ABS) ⁸ (EC Four-Plate test)	2 mm 'Zone' of Inhibition	Poultry (29) Pork etc. (22)	51	51	0

¹ These toxins may accumulate in shellfish grown in seawater with excessive marine algae. Retail/Catering level (largely) sampling by EHO service. Principal official monitoring is at production level by Dept. of CMNR/Marine Institute

² Diarrhetic Shellfish Poisoning (DSP).

³ Azaspiracid (AZA).

⁴ Amnesic Shellfish Poisoning (ASP).

⁵ Includes Routine, Inspection and Complaint samples

⁶ Refers in the main to Gluten-free foods based on wheat starch.

⁷ Amines tested for: histamine; tyramine; cadaverine; putrescine. Biogenic amines are sometimes produced in fish etc. from amino acids by bacteria. Histamine- or Scombroid poisoning is an allergy-like intoxication.

⁸ Principal official monitoring is at production level (meat plants etc.) by the Dept. of Agriculture, Food and Rural Development and by the Local Authorities.

* Codex Standard 118 – 1979 was revised and published in late 2008, this standard reduced the previous level of 200ppm for 'rendered gluten-free foods' to 100ppm; on the 20th of January 2009 the EU published Regulation (EC) 41/2009 that sets the same limits as the 2008 Codex standard; however the EU Regulation "shall apply" from the 1st of January 2012 therefore the previous Codex gluten limits (200 ppm & 20 ppm) are in use (with the agreement of the FSAI) until 2012.

Gluten: The Gluten proteins contained in wheat, barley, rye and their cross-bred varieties are toxic to coeliacs. CODEX and EC Commission Regulation No. 41/2009 set new gluten limits as follows:

- 100 mg/kg for "very low gluten" foods, having one or more gluten-containing ingredients...
- 20 mg/kg for naturally gluten-free foods.

In 2009 a diverse range of gluten-free foods from pharmacies, health food shops, supermarkets etc. and local manufacturers was received. All of the 86 HSE official programmed samples complied with the legislation, as did the 50 'private' samples; many of these 'private' samples are tested for companies, upon request from the Irish Coeliac Society. The above results indicate an overall high quality (wrt gluten levels) of gluten-free foods available to the consumer.

In 2009 we participated in a **safefood-HSE North-South Survey** of Restaurant/Catering-level meals served as 'Gluten-free'. To date very little information has been available on such foods. Coordinated by safefood, sampling officers (student EHOs and/or EHOs in the North and South) obtained information from servers and/or management on the knowledge and training of the restaurant staff concerning coeliac disease and gluten-free foods generally. Officers also procured "gluten-free" meals for analysis. A total of 248 premises was sampled, 200 in the South and 48 in the North. Results for the 260 samples (mostly main courses but also some desserts and starters) tested are summarised below:

Gluten content of the samples

Gluten content (mg/kg)	Number of Samples	Percentage of Total
Less than 10	219	84.2%
10-20	14	5.4%
21-100	7	2.7%
101-200	3	1.2%
201-1,000	3	1.2%
>1,000	14	5.4%
Total	260	

The majority (90%) of samples were of very high quality, containing less than 20 mg/kg gluten. A further 3.9% of samples were also of high quality, levels ranging from 21 to 200 mg/kg. 17 samples (6.5%) contained excessive gluten (> 200 mg/kg). The 14 samples with more than 1,000mg/kg gluten (results range: 1,050 to 6,740 mg/kg) are disappointing; they indicate a lack of knowledge of the basic steps required to ensure that a 'gluten-free' meal is indeed gluten-free. The levels found suggest the



use of gluten-containing ingredients in the preparation of the meals, rather than inadvertent cross contamination. The "unsatisfactory" samples resulted in follow-up visits from the authorised officers. A report on the survey has been compiled by safefood, with recommendations made on improving the situation. The need for ongoing training in preparing allergen-free foods, including gluten-free foods, is clearly indicated for catering staff.

An FSAI Working Group on Gluten has compiled a report on Gluten-free Food, - see <http://www.fsai.ie/assets/0/86/204/4a70f71b-7c15-4e72-bd6f-c85deba481de.pdf>

Biogenic amines: 320 Fish samples were tested here in 2009 for **Histamine** and 3 other biogenic amines, viz. Putrescine, Cadaverine and Tyramine. These included 210 fish samples (21 x 9 sub-samples, and 21 other samples), submitted by the Sea Fisheries Protection Authority (SPPA), 36 (4 x 9 sub-samples) Border Inspection Post (BIP) samples from The Department of Agriculture, Fisheries and Food (DAFF) and 74 samples from the HSE EHOs.

15 of the 320 samples had excessive Histamine (144 - 3,100mg/kg), including 13 EHO samples (4 single and 1 x 9 follow-up sub-samples) and 2 BIP samples (from one set of 9). Of the 13 unsatisfactory EHO samples, 10 related to one incident involving mackerel. Two Food Hazard/Contamination Reports were issued and a RASFF (Rapid Alert System for Food and Feed) Notification was issued for the BIP sample, frozen Tuna Loins from Dublin Port.

19 of the 320 samples contained elevated (>100 mg/kg) Cadaverine and 5 had elevated (>100 mg/kg) Tyramine; one had elevated (>100 mg/kg) Putrescine.

For a general report on Histamine poisoning see <http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/Seafood/FishandFisheriesProductsHazardsandControlsGuide/ucm091910.htm>.

Anti-bacterial substances (ABS): No residues of anti-bacterial substances (ABS) were found in any of the 51 samples of fresh poultry and pork screened in 2009 by the EC Four-Plate Test.

2.6 Nutrition/Composition, Additives, Labelling etc.

There has been an increase in nutritional/compositional testing in the laboratory in recent years, in particular in the areas of 'salt'/sodium, folic acid and general nutritional labelling.

2.6.1 Sodium/Salt in Food

Following research by the Consensus Action of Salt and Health (CASH), the World Health Organisation (WHO) and others, there is considerable international effort being made to reduce population dietary intakes of 'Salt'/Sodium. The Food Safety Authority of Ireland (FSAI) has recently published a report entitled "*Salt and Health: Review of the Scientific Evidence and Recommendations for Public Policy in Ireland*", www.fsai.ie/uploadedFiles/Science_and_Health/salt_report-1.pdf.

Data quoted in the report, and applied to Ireland, yield a calculated reduction of ca. 1,700 deaths in Ireland per year from strokes and ischaemic heart disease, if recommended reductions in population intake of salt are achieved. The data indicate that excessive consumption of salt is a significant public health issue in Ireland and elsewhere. FSAI is implementing a programme, in conjunction with the food industry, to reduce salt levels in the major, salt-containing, processed foods, - see www.fsai.ie for a progress update. The stated aim is to reduce the average intake of salt to 6 grams per day (from 10 grams per day) by 2010. An ultimate maximum intake of 4 g salt per day is recommended. Also, a common EU framework for an overall reduction in salt intake of 16% minimum by 2012 has been agreed. The 2009 results for the FSAI programme are summarized in Table 5.



Table 5: Summary of ‘Salt’ (Sodium & Potassium) Testing Results 2009

Parameter(s)	Food Types etc.		Samples Tested	Average Results (g/100g)	Range of Results (g/100g)
‘Salt’ (Sodium & Potassium)	Processed Meats & Meat Products FSAI survey	Sodium	127	0.81	0.04 – 2.36
		Potassium	127	0.24	0.09 – 0.87
	Sauces FSAI survey	Sodium	71	0.4	0.06 – 1.44
		Potassium	71	0.19	0.03 – 0.42
	Prepared Meals FSAI survey	Sodium	58	0.23	0.07 – 0.41
		Potassium	58	0.17	0.08 – 0.38
	Cheeses FSAI survey	Sodium	70	0.8	0.19 – 1.61
		Potassium	70	0.11	0.04 – 0.34
	“Ready” Pre-Packaged Meals Co. Galway EHS local survey	Sodium	30	0.31	0.15 – 0.67
		Potassium	30	0.21	0.05 – 0.75
	Prepared Meals Cooked/Prepared on Premises HSE regional survey	Sodium	33	0.40	0.12 – 0.76
		Potassium	33	0.28	0.11 – 0.56
	FSAI-HSE Nutritional Claims Survey Imported Foods of Animal Origin	Sodium	43	0.66	<0.01 – 2.32
		Potassium	43	0.24	<0.01 – 0.57
	Misc. Processed foods ¹ HSE regional samples & 1 sample from LAV (Co.)	Sodium	14	0.61	0.11 – 1.77
		Potassium	14	0.28	0.12 – 0.88
	Breakfast Cereals HSE regional samples	Sodium	30	0.30	<0.01 – 0.52
		Potassium	30	0.30	0.05 – 0.76
	Foods for particular nutritional uses (PARNUTS) HSE regional samples	Sodium	10	0.39	0.17– 1.05
		Potassium	10	0.74	0.52 – 1.04
Misc. Processed foods ² HSE Dietetics (Merlin Park Hospital)	Sodium	22	1.36	0.03 – 10.05	
	Potassium	25	0.65	0.04 – 3.6	
Bread ³ HSE Public Health (Dr. Stevens’ Hospital)	Sodium	19	0.42	0.35 – 0.56	
	Potassium	19	0.16	0.1 – 0.22	
Bottled Water HSE regional samples	Sodium	8	183 (mg/L)	17 – 1050 (mg/L)	

¹ Including prepared dishes, crisps, soup, meat & processed meat products.

² Including coffee, gravy granules, bread, chilli powder, sauces, seasoning, vinegar, cheese, orange & lemon zest, sun-dried tomato, vegetable stock cubes & vanilla pods.

³ Sodium values required as part of procurement process for purchasing bread in the HSE

The Table also includes results from HSE’s regional and local surveillance (samples from EHOs) of a range of foods including Prepared Meals, Miscellaneous Processed Foods etc., and results for other clients. For example, the average sodium value of 0.40 g/100g for the Prepared Meals (Cooked/Prepared on premises) corresponds to 1.02 g ‘salt’ (sodium chloride) per 100g, and to 4.1 grams of salt per ‘meal’ (for meal weight of 400g). This means that the full targeted daily intake of salt (4 grams) is contained in just one course of one meal.

Note: Teagasc Food Research Ashtown is performing research into reducing salt in ready meals and has published some test results for these food types (see article in TRResearch Volume 5, Number 2, Summer 2010).

Table 5 also includes an interesting survey on the testing of breads for HSE Public Health to monitor Sodium levels as part of the bread procurement/purchasing process in the HSE.

2.6.2 Nutritional Claims Survey FSAI-HSE 2009

Regulation 1924/2006 and Statutory Instrument S.I. 461/2009 apply to nutrition and health claims made in commercial communications (whether in the labelling, presentation or advertising) of the food to be delivered to the final consumer.

Coordinated by FSAI's Cross-Agency Working Group on Labelling, a number of national surveys of Imported and Irish Foods of Animal Origin were carried out in 2009. This is the first time that such cross-agency national surveys have been carried-out. The testing performed by this laboratory in 2009 is summarised in Table 6 below.



Table 6: Nutritional Claims Surveys FSAI-HSE 2009

Survey Description	Samples Submitted by	Test	Samples Tested	Non-Complying Samples
Imported Foods of Animal Origin ¹ with Labelled Fat Claims Retail level.	HSE EHOs	Fat	58	5
		General Labelling ²	58	2
Imported Foods of Animal Origin ¹ with Labelled Protein Claims Retail level.	HSE EHOs	Protein	68	2
		General Labelling	68	6
Imported Foods of Animal Origin ¹ with Labelled Salt/Sodium Claims Retail level	HSE EHOs	Sodium	43	1
Irish Foods of Animal Origin ¹ with Labelled Claims on Fat, Protein or Salt (Sodium) Manufacturing/Processing level	DAFF & LA Veterinary services	Fat	30	6 ³
		Protein		5 ³
		Sodium		4 ³
		General Labelling		3 ³

¹ Meat, Meat Products, Dairy Products, Prepared Dishes etc.

² Samples examined for compliance with the general, nutritional and health claims legislation.

³ Results indicated these samples to be deficient w.r.t. the labelling legislation, but nonetheless not in breach of the legislation as samples were not taken at retail level.

Some samples were inaccurately labelled with regard to their content of Fat, Protein or Salt (Sodium) whilst others were deficient with regard to general, nutritional or health claims legislation (see Table 6 for summary).

2.6.3 Other Nutritional Testing

Table 7 summarises other nutritional testing carried out here in 2009.

Table 7: Other Nutritional/Compositional Testing 2009

Parameter	Food Types etc.	Samples Tested	Results Range
Folic Acid	Processed Cereals	22	<20 to 614 µg/100g
	Porridge	4	<20 to 356 µg/100g
Fat	Packaged 'Ready Meals'. Locally sampled (Co. Galway EHOs) survey	30	1.4 – 21 g/100g
	Food Supplements (Foods for particular nutritional uses, i.e.PARNUTS Samples)	10	<1 – 14.7 g/100g
	Other samples	11	0.7 – 13.1 g/100g
Protein	Food Supplements (PARNUTS Samples)	10	10.1 – 51.8 g/100g
Iron (Fe)	Breakfast Cereals	31	14 – 190 mg/kg

Folic Acid testing was introduced here in 2006, as an analytical resource for FSAI in support of the potential mandatory fortification of breads with folic acid. Two national surveys of fortified and non-fortified breads on the Irish market have been carried out to date (2006 and 2007), and also a pilot-plant fortification study (2008) of flours and breads to determine how best to achieve the desired folic acid levels in the finished products. The report of the Implementation Group on Folic Acid Fortification www.fsai.ie/assets/0/86/204/cc3c2261-7dc8-4225-bf79-9a47fbc2287b.pdf did not recommend mandatory fortification but recommends monitoring of the (voluntary) fortification of foods on the market. In 2009 a small survey of Breakfast Cereals (for Folic Acid content) was performed (see Table 7). Results were generally within the expected range, with some samples containing somewhat more than the labelled values. A more detailed report was issued to FSAI. The laboratory started development of a method for Folic Acid in Supplements with a view to surveying all folic-acid-containing supplements (notified as food supplements or as medicines) on the market in 2010. 31 samples of breakfast cereals were analysed for Iron content. The results ranged from 14-190 mg/kg.

Nutritional Content of Chicken and Potato Products: In 2006 *safefood* commissioned a study on

the Nutritional Content of Chicken (breast, burgers, nuggets etc.) and Potato Products (chips, wedges, etc.) in Deli Counters and Takeaway Outlets. Testing for fat, saturated fat, protein, sodium, and edible weight was carried out by this laboratory and the Cork Public Analyst's laboratory in 2006. The final report on this study was published by *safefood* in 2009, - www.safefoodonline.ie

Key aspects/recommendations of the report include:

- Fast food is higher in fat and salt compared to comparable foods prepared at home.
- Fast food should be considered as an 'occasional' food (e.g. once a week or less often).
- The large variability in portion sizes. Many fast food outlets provide very large portion sizes.
- Larger chunky chips are preferable as they absorb less fat during the cooking process.
- Consumers should request that salt not be added to the food during the preparation.
- Some vegetables such as a side salad or peas etc. should be added to contribute to the recommended 5-a-day intake (fruit and vegetables).

2.6.4 Additives/Labelling/ Compositional Quality Results 2009

Table 8 summarises various testing for additives / labelling /composition etc. in 2009.

Table 8: Summary of Additives/Labelling/Compositional Quality Results 2009

Parameter(s)	Food Types etc.	Number of Samples Tested & Results		
		Total	Complying	Non-complying
Additives				
Benzoates & Sorbates¹	Soft drinks (23), Sauces (21) & Preserves (3)	47	47	0
Sulphur Dioxide¹ (Sulphites)	Meats/fish (52), Wines/Beers (29), Prawns/Crabs (51), Dried fruit/veg (67), Peeled potatoes (3) Others (4)	206	198	8
Nitrites & Nitrates¹	Cured Meats (6) & Meat Products (2)	8	8	0
Artificial Sweeteners² (i.e. Acesulfame K, Aspartame & Saccharin)	Non-alcoholic Drinks (1) Sauces (2)	3	3	0
Food Irradiation³	Herbs/Spices (58), Seasonings/stocks (10)			
A) Photostimulated luminescence screening	Herbal teas/teas/coffee (23), Vitamins & Food Supplements (12), Seeds (5), Fruit & Veg (4), PARNUTS (7) & Others (9)	128	128	0
B) Confirmatory Thermoluminescence testing (SUERC, Scotland)	Herbs/Spices (3), Seasonings/stocks (3), Herbal teas/tea (2),	8	6	2
Dairy Testing⁴	Dairy products (milk, cream etc.)	52	42	10
General Labelling	Miscellaneous Packaged Foods	384	281	103
Alcoholic Strength	Pub-level Spirits	21	21	0
Others:				
pH	Miscellaneous Food Types	311	311	0
Moisture	Miscellaneous Food Types	2	2	0
Ref. Index/Sol. Solids	Jams, Chutney etc.	8	8	0

¹ Authorisation and limits set in Statutory Instrument No. 40 of 2008. EU Directives require member states to monitor their usage and intake of Additives.

² Authorisation and limits set in Statutory Instrument No. 34 of 2008.

³ S.I. 297 of 2000 authorises irradiation of herbs, spices and vegetable seasonings. Irradiated foods must be labelled as such.

⁴ Varying Tests: ALP ('Pasteurisation'), Inhibitory Substances (Delvo test), FPD/Extraneous water, Fat, Protein, General Labelling etc. Sample numbers exclude dairy products received for other testing (Nutr'l claims, Lead (Pb) etc.)

The choice of **additives** monitored is made by FSAI and HSE on a year-to-year basis. Factors include usage, risk of exceedance of the acceptable daily intakes (ADIs), other concerns re: risk, and previous results history. The testing is performed both in the context of monitoring for legislative compliance and also to collect data for the EU on levels and intakes. The other HSE areas have separate additives surveillance programmes. The results from this laboratory (see Table 8) for 2009 and for previous years, indicate a generally high level of compliance. Non-complying cases are dealt with by the authorised officers.

General Labelling: Statutory Instrument No. 483 of 2002 consolidates legislation on the labelling of foodstuffs in general. An overview of labelling legislation and enforcement procedures etc. is outlined in a FSAI publication (The Labelling of Food in Ireland – FSAI 2007).

<http://www.fsai.ie/assets/0/86/204/5dfb809a-7902-4f03-bb6a-6e25a5a09736.pdf>.

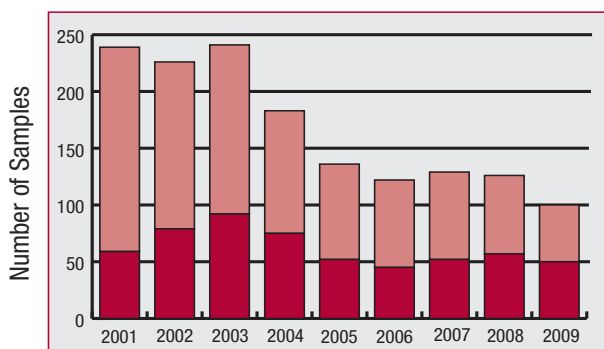
The European Commission has begun a consultation process on an overhaul of European food labelling legislation which is to continue into 2010.

In 2009, 384 samples were examined here for compliance with labelling legislation and 103 were designated as being in breach of the legislation. Many of the problems arise from East European and other 'ethnic' processed foods with the absence of labelling in English or Irish, with Quantitative Ingredients Declaration (QUID) labelling deficiencies, and from issues in relation to the labelling of foodstuffs with nutritional and/or health claims that are not permitted under the terms of Regulation 1924/2006.

2.7 Complaint Samples

Complaint samples arise when consumers find contamination, infestation, spoilage, extraneous matter or other defects in foods. Some complaints arise from food poisoning incidents (these samples are tested primarily in the Food Microbiology laboratories, but may also require chemical testing). Complaint samples analysed in this laboratory usually involve the presence of foreign bodies such as insects, hairs/fibres, plant 'debris', plastic, glass, metal, general dirt/unidentified material or abnormal odours/tastes in food.

Complaint Samples Testing



■ Satisfactory Samples ■ Non-Complying Samples

A total of 100 complaint samples received from the EHO service (86) and directly from the public (14) were investigated here in 2009. Of the 100, the number of adverse reports issued was 50 (50%), see Appendix 2 for a breakdown according to food category. The number of food complaints received in this laboratory has continued to decrease from a steady average of ca. 230 per annum (1999-2003) to an average of 133 (2004 – 2009). The reason for this reduction is unclear but it may be related to better handling of complaints by retailers.

The number of food complaints received represents a very small fraction of the total number of food items consumed in our region.

2.8 Food Alerts (RASFF) and Hazard/Contamination Reports

The EU Rapid Alert System for Food and Feed (RASFF) is activated when a member state reports significant contamination/risk associated with a batch of food or feed. The EU Commission has produced a report on 2008 RASFF Notifications, giving detailed breakdowns of category of food, nature of risk/hazard, origin of food, country of origin of alert etc., see http://ec.europa.eu/food/food/rapidalert/report2008_en.pdf

A short summary of the 2008 Notifications by Hazard group is given below:

Hazard / Risk Group	Number of Notifications 2008
Food: Chemical and Physical Hazards ¹	2,233
Food: Microbiological Hazards ²	524
Food: Other Hazard / Risks ³	357
Animal Feedstuffs Hazards ⁴	18

- 1 *Mycotoxins, Heavy Metals, Pesticides and Veterinary Residues, Additives, Allergens, Marine biotoxins, GMOs, Foreign Bodies, Irradiation, Migration from food contact materials, Composition etc.*
- 2 *Pathogenic Bacteria (Salmonella, Listeria etc.) and Viruses, Other Microbiological Contamination.*
- 3 *Insufficient Controls, Unauthorised Production, Absent Labelling etc., Defective Packaging, Others.*
- 4 *All Hazards notified for Animal Feedstuffs.*

Food Hazard/Contamination Reports are issued by the laboratory when contamination deemed significant is detected. Upon consideration by FSAI, a Food Alert notification may be issued (to the EU) depending on their evaluation of the risk. In 2009, 14 Food Hazard/Contamination Reports were issued by the laboratory, relating to: undeclared Sulphur Dioxide in sausages (2) & wine (1); Fumonisin B₁ & B₂ in cornmeal (1) & maize (1); Histamine in mackerel (1) (this related to 12 samples) & Tuna loins (1); Lead in ceramics (2) (a ceramic plate & a ceramic bowl); Foreign object in muesli (1) & infant formula (1); Live moths in wheat bran (1); Weevils in brown rice (1) and Yeast, moulds & ethanol in an orange drink (1). One RASFF alert and 2 RASFF information notifications were issued as a result of the above food contamination reports.

A summary of the total number of Food Hazard/Contamination Reports issued to-date is outlined below:

Number of Food Hazard / Contamination Reports issued								
2009	2008	2007	2006	2005	2004	2003	2002	2001
14	7	24	26	23	16	16	19	43

3. WATERS / EFFLUENTS

3.1 Introduction

The laboratory provides a water testing service to the HSE, Local Authorities, the general public and local industry.

The laboratory analysed a total of 9,735 water samples in 2009. These consisted of drinking waters, bathing waters, pool waters, effluents and haemodialysis samples.

Most of the samples received are drinking waters, which are tested for compliance with the European Communities (Drinking Water) Regulations 2007, S.I. 278 of 2007. Up to 25 different chemical parameters are analysed. Summaries of the results for selected parameters are shown below. Bathing water samples are tested for compliance with the Quality of Bathing Water Regulations 1992, S.I. No. 155 of 1992.



3.2 Sample Sources 2009

The samples received by the laboratory were from the following sources:

Source	Number
Galway (HSE)	1,787
Galway County Council	199
Galway City Council	1,101
Mayo	1,495
Roscommon	240
Donegal	1,540
Sligo / Leitrim	701
North Tipperary	447
Clare	333
Limerick	694
Haemodialysis (Hospitals)	388
Private	795
Miscellaneous	15
TOTAL	9,735

3.3 Fluoridation of Public Water Supplies

Fluoride has been added to Public Water Supplies in Ireland since the 1960s as a means of improving dental health. The Fluoridation of Water Supplies Regulations 2007, S.I. No. 42 of 2007, specifies a concentration range of 0.6mg/L to 0.8mg/L Fluoride. The Regulations also require that water supplies to which Fluoride has been added shall be monitored for Fluoride at intervals not exceeding one calendar month.

This laboratory carries out the official monthly fluoride testing on all fluoridated supplies in the region. The results can be viewed in Appendix 5.

3.4 Lead

The toxic nature of Lead has been known for a very long time. Lead affects the developing nervous systems and intellectual and behavioural developments. Consequently, embryos and children under six years of age are most at risk.

Lead is widespread in the environment and can be found in older homes with leaded paint, in soil, in plumbing materials and elsewhere.

Factors affecting the extent to which lead may leach into drinking water include the following:

- The corrosive tendency of the water. Water with a low pH (acidic) will dissolve Lead pipes and solders much more so than water with a high pH (alkaline), and result in significant concentrations of Lead in the Drinking Water.
- The amount of Lead piping in contact with the water. In many cases, some of the lead piping will have been replaced.
- The length of time that the water is in contact with the Lead piping. The longer the contact time, the higher the concentration of Lead in the water. The Lead level is usually highest in the morning due to the water "sitting" overnight. Discarding the first flush of water in the morning was a traditional practice in areas with known Lead piping.

The current limit for Lead in Drinking Water is 25 µg/L Pb. This level will be reduced to 10µg/L Pb in 2013.

A summary of results for the 708 samples tested specifically for Lead in 2009 is shown in the table below.

Table 9: Lead Results 2009

Lead Results (µg/L).				
Concentration Range	≤ 5	6-25	26-100	>100
No. of Samples	414	157	122	15

3.5 Volatile Organic Compounds (VOCs)

VOCs are a class of compounds which, in the context of Drinking Waters include Trihalomethanes, Benzene (may occur from industrial effluents), 1,2, Dichloroethane (used in the production of vinyl chloride), Trichloroethene and Tetrachloroethene (used

in the dry cleaning industry). Benzene is classed as being carcinogenic and the latter three compounds are classed as possible human carcinogens.

Trihalomethanes are not naturally occurring compounds. They occur as by-products of the disinfection process, as a result of the reaction between the added chlorine and organic matter, which may be present naturally in the water.

Chloroform (the predominant Trihalomethane) is classified as a possible human carcinogen. The other Trihalomethanes are Bromoform, Bromodichloromethane and Dibromochloromethane.

The limit for Total Trihalomethanes was reduced from 150 µg/L to 100 µg/L on 25th of Dec. 2008.

A summary of results for 2009 is shown in the table below. The high results can be attributed to a limited number of water supplies that were analysed repeatedly.

Table 10: Trihalomethane Results 2009

Trihalomethane (µg/L).					
Concentration Range	≤ 10	11-50	51-100	101-150	>150
No. of Samples	124	221	270	132	152

3.6 Aluminium

Aluminium salts are employed in a flocculation process at some water treatment plants as a means of reducing the amount of suspended and colloidal matter. The Aluminium is subsequently removed, but traces may persist in the final water.

While the benefit of this process is partly aesthetic, it also serves to reduce the number of Cryptosporidium Oocytes and the amount of organic matter that may be present. The reduced organic matter will result in the formation of lower Trihalomethane levels after chlorination.

The current limit for Aluminium in Drinking Water is 200 µg/L Al.

The table below shows a summary of the results for 2009. This table includes some results for untreated water samples to which Aluminium was not added.

Table 11: Aluminium Results 2009

Aluminium in Public Supplies - Results in µg/L				
Concentration Range	≤ 20	21-200	201-1000	>1000
No. of Samples	2,052	2,383	188	11

3.7 Arsenic

Inorganic Arsenic compounds are classified in Group 1 (carcinogenic to humans) by the International Agency for Research on Cancer.

Arsenic can result from industrial activity or can occur naturally as a result of dissolution of minerals and ores. Where elevated levels are recorded, it is normally in specific geographic areas where these ores and minerals are present. The current limit for Arsenic in Drinking Water is 10 µg/L As.

The results for the year 2009 are summarised below. The raised levels recorded were found in private supplies.

Table 12: Arsenic Results 2009

Arsenic Results (µg/L As)				
Concentration Range	≤ 10	11-50	51-100	>100
No. of Samples	1,251	21	5	2

3.8. Haemodialysis Water

Haemodialysis units operate water treatment systems to produce purified water for use in Dialysis machines. The laboratory performs a chemical analysis on these samples. The number tested during the year was 388.

3.9 Analytical Developments

During the year the laboratory was successful in being granted accreditation status for a total of eight VOC compounds. The range of accredited methods was further extended with the inclusion of eleven metals, now routinely performed by ICP/MS.

3.10 Private Samples

The laboratory provides a service to private individuals on request to test newly bored wells or to investigate concerns or complaints about the water quality. The number of samples tested for private individuals in 2009 was 795.

4. AIR POLLUTION MONITORING

4.1 European Legislation

European legislation on Air Pollution Monitoring consists of a framework directive, 'Council Directive 96/62/EC on ambient air quality assessment and management', along with four "daughter" directives which deal separately with the following.

- limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air - 1999/30/EC
- limit values for benzene and carbon monoxide - 2000/69/EC
- target values for ozone in ambient air - 2002/3/EC
- target values for arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons - 2004/107/EC

A Council of Europe decision (97/101/EC) was also passed in 1997 establishing a reciprocal exchange of information and data within member states.

These legislative instruments, with the exception of directive 2004/107/EC (which may be merged in the future) were replaced by a single directive 2008/50 EC on ambient air quality and cleaner air for Europe in 2008 (CAFÉ). This has simplified and clarified the legislative position.



4.2 National Legislation

The framework directive became Irish Law through the “Ambient Air Quality Assessment and Management Regulations 1999”, S.I. No. 33 of 1999.

The provisions of the first two “daughter” directives were embodied in the Air Quality Standards Regulations 2002, S.I. No. 271 of 2002.

The Ozone in Ambient Air Regulations 2004, S.I. No. 53 of 2004 transposes the third “daughter” directive.

The fourth “daughter” directive is transposed into Irish Law by S.I. No. 58 of 2009.

The Air Pollution Act 1987, ‘Air Quality Standards Regulations 1987’, (S.I. No. 244 of 1987) was revoked on 31st of December 2009.

S.I. 271 of 2002 sets the country into four zones for the purpose of assessment and management of air quality. Galway City is in zone C along with Limerick City, Waterford City and 18 other towns and urban areas around the country. The number of monitoring stations within each zone is also stipulated.

4.3 Laboratory Results

This laboratory operates air monitoring stations at two locations in the city, near the Bodkin roundabout (adjacent to Currys) and at Terryland Waterworks.

This work is performed on behalf of Galway City Council. The parameters monitored are Sulphur Dioxide, Black Smoke and PM₁₀.

Data recorded by the laboratory is reported to and published by the EPA.

4.3.1 Sulphur Dioxide

Sulphur Dioxide (SO₂) may enter the air from the natural environment or from the combustion of fuels which contain Sulphur. High levels of SO₂ can cause respiratory problems and lead to damage to the ecosystem. It is a major precursor to acid rain. The regulations stipulate one SO₂ monitor in zone C.

The EPA operates a mobile monitoring station in this zone. The laboratory continues to monitor for SO₂ at both stations in the city.

The results for 2009 are shown in Appendix 6.

The daily limit value set for the protection of public health of 125 µg/m³ was not exceeded at any time during the year.

4.3.2 Black Smoke

Black smoke measurement was the traditional method for determining the amount of particulate matter in the air. Legislative guidelines date back to 1980.

Since Jan 2005, there is no legislative requirement to measure this parameter; however the laboratory continues to perform this measurement at both monitoring stations. Given the data that has been collected over many years, it is considered useful to continue this measurement to facilitate the observation of long term trends.

4.3.3 PM₁₀

PM₁₀ is the term used to describe particulate matter which is 10µm or less in diameter. These particles are capable of penetrating the respiratory system resulting in respiratory disorders. Sources of PM₁₀ include the incomplete combustion of fossil fuels, particularly diesel, and dust from road traffic.

S.I. 271 of 2002 requires that PM₁₀ are monitored at two locations in zone C.

The EPA operates one monitoring unit and this laboratory operates another one at the Bodkin roundabout site.

The regulations require that the daily (24 hour) PM₁₀ average value does not exceed 50µg/m³ more than 35 times per year. The yearly average limit value is 40µg/m³. The 24 hour average limit was exceeded twice during the year. The highest reading was 59µg/m³. The daily average for the year was 14µg/m³.

The results for the year are set out in Appendix 6.

5. PHARMACEUTICALS AND TOXICOLOGY

5.1 Pharmaceutical Laboratory

Service to the Irish Medicines Board (www.imb.ie). The function of the Irish Medicines Board (IMB) is to protect and enhance public and animal health through the regulation of human and veterinary medicines and medical devices available for sale or manufactured in Ireland, and to participate in systems designed to do the same throughout the EU.

Since 1976 this laboratory has provided an analytical service to the Irish Medicines Board (IMB), formerly the "National Drugs Advisory Board", to test drug products and medicines as well as providing technical advice and support related to the testing of medicines.

In this regard, the Pharmaceutical Section of the Public Analyst's Laboratory, Galway has been appointed an **Official Medicines Control Laboratory (OMCL)** under the framework of the European Directorate for the Quality of Medicines and Healthcare (EDQM) and the Council of Europe.

Role as an Official Medicines Control Laboratory (OMCL)

At a **National** level, the laboratory contributes to the protection of public health and the regulatory function of the IMB by providing independent analytical data and technical advice on medicinal products that enable the IMB to make informed decisions on the quality and the compliance status of medicines.

At a **European** level, the laboratory actively participates in activities of the OMCL Network (collaboration between regulatory medicine testing laboratories designed to improve communication, enhance cooperation and to harmonise methods of work across the EU and other states). These activities include the testing of Centrally Authorised Medicinal Products (CAP), the testing of Mutually Recognised/Decentralised Products (MRP/DCPs), and participation in Proficiency Testing Studies (PTS), (for more information see www.edqm.eu, Control of Medicines Section).



Sampling and Analysis

97 pharmaceutical samples were received during 2009;

Irish Medicines Board (Finished Products)	75
Irish Medicines Board (Enforcement Samples)	2
EDQM – Centrally Authorised Products	5
Proficiency Tests (EDQM and Pharmassure)	15

Testing of Pharmaceuticals is carried out according to the monographs of the European Pharmacopoeia, the British Pharmacopoeia, the United States Pharmacopoeia and/or company methods. A wide variety of tests may be carried out on each sample including; Appearance Testing, Uniformity of Mass, pH, Identification and Assay by HPLC, Identification and Assay by UV-Vis, Uniformity of Content, Dissolution, Assay by Titrimetry, Water Determination by Karl Fischer, Loss on Drying, Identification by IR, Identification by TLC, Specific Optical Rotation, Melting Point, Specific Gravity, Related Substances by HPLC, etc.

Details of analytical findings may be found in the IMB 2009 Annual Report, when available (see www.imb.ie)

Due to a continued shortage of staff, there is a backlog of samples for testing in this area. This laboratory will continue to work closely with the IMB to develop the Irish Sampling and Analysis Programme. While there is a pressing need for additional laboratory personnel, given the present economic climate and the current staff-recruitment embargo in the HSE, the recruitment of additional laboratory personnel is not likely to occur in the near future.

Quality System within OMCLs

To ensure quality and comparability of results within the Network, OMCLs must operate to a quality system based on ISO/IEC 17025. During 2009, at the request of INAB (the Irish National Accreditation Service), a “Flexible Scope” approach was applied to a number of tests in the laboratory. The transition to flexible scope was successfully audited by INAB in December 2009.

The laboratory also operates to guidelines issued by the EDQM-OMCL Network and accepted by the EA (European Accreditation Cooperation) on a range of topics including;

- Validation of Analytical Procedures
- Evaluation & Reporting of Results
- Qualification of Equipment including HPLC, GC, UV-Visible and IR Spectrophotometers and Automatic Titrators (see www.edqm.eu for more information).

Proficiency Testing Schemes

The laboratory successfully took part in EDQM and Pharmassure-organised Proficiency Testing Schemes during 2009, covering the following areas: Assay by HPLC, Assay by UV, TLC, Dissolution, pH, Density, Melting Point, and Loss on Drying.

Attendances

One member of staff attended the Annual Meeting of the EDQM European Network of OMCLs held in Vienna in May 2009, funded by the Irish Medicines Board. One member of staff attended the USP Users forum held in Dublin, in February 2009.

5.2 Toxicology Laboratory

A basic toxicology service is offered, mainly to the Consultant Pathologists and Physicians in HSE West as well as to Veterinary Surgeons and members of the public.

Blood and urine “B-samples” taken under the Road Traffic Act are also independently analysed for alcohol. The number of such samples tested during 2009 was 19, of which 79 % were above the legal limit.

The total number of samples tested during 2009 was 249, made up as follows;

Ethanol (Post Mortem)	148
Ethanol (Road Traffic Act)	19
Proficiency Tests	60
Ethanol (GP samples)	15
Ethanol (Beverages/Foodstuffs)	7

Quality System

The laboratory takes part in an External Quality Assessment Scheme (UKNEQAS) organized by Cardiff Bioanalytical Services Ltd. Samples of blood, serum and urine are received on a monthly basis and analysed for ethanol.



6. COSMETICS

6.1 Introduction

The EU retail market value for cosmetic products has been estimated at €65 billion (EUROSTAT data for 2004). Cosmetics are widely used consumer products which require regulation to ensure their safety and also to facilitate trade. The fact that cosmetics are generally not consumed reduces their potential risks to health (vs. e.g. food risks). Nonetheless cosmetics are subject to occasional chemical, microbiological or physical contamination. In addition to the general hazards which they may contain, cosmetics are reported as among the principal agents responsible for Contact Dermatitis. Separately, and unrelated to legislative compliance or risk to the general user, cosmetics are reported as the number one source of poisoning of children, and the number nine cause in adults, in the US (2008 Annual Report of the American Association of Poison Control Centres... (NPDS)).

6.2 Cosmetics Legislation and EU Control Systems

EU Council Directive 76/768/EEC (and amendments), governing the marketing and safety of cosmetics in the EU, has been 'recast' into a new Regulation (EC No. 1223/2009) which comes into effect from 11th July 2013. In Ireland the European Communities (Cosmetics Products) Regulations – S.I. No. 870/2004, gives effect to the EU Legislation. The Directive & Regulations set out standards which must be complied with by the Cosmetics Industry, and also prescribe enforcement mechanisms and penalties.

Schedule 2 of the S.I. lists 1,132 prohibited compounds and groups of compounds. Schedules 3 to 7 set restrictions on the use of a range of permitted ingredients. The EU now requires member states to prepare and submit National Cosmetics Surveillance Programmes.

The EU has an expert resource, the Scientific Committee on Consumer Products (SCCP), which has issued a series of Scientific Opinions on Cosmetics' Safety matters; e.g. recent Opinion on Nano-particles.

Through the Platform of European Market Surveillance Authorities for Cosmetics (PEMSAC), there is

interaction between cosmetics control officials. The DoHC, the IMB and HSE now participate in PEMSAC.

Within The European Directorate for the Quality of Medicines & HealthCare (EDQM), the Department of Biological Standardisation, OMCL Network and HealthCare (DBO) coordinates the Committee work and ensures Secretariat responsibility for cosmetics since 1 January 2009.

Recently (June 2010) a meeting was held, attended by official European laboratories involved in cosmetic analysis. The purpose of the meeting was to establish a network of official laboratories and to enhance harmonisation and co-operation between individual control laboratories.

RAPEX, is the EU rapid-alert system for notifying hazards/risks associated with cosmetics and other consumer products (toys, electrical devices, vehicles, etc).

http://ec.europa.eu/consumers/safety/rapex/docs/rapex_annualreport2008_en.pdf

In Ireland the National Consumer Agency (NCA) www.consumerconnect.ie administers RAPEX.

The most common recent cosmetics hazards identified in RAPEX include - Hydroquinone in creams, Dibutyl Phthalate in nail varnish, Lead in children's make-up, Diethylene Glycol in toothpastes, N-nitrosodiethanolamine in shampoos & soaps etc and general microbiological contamination.

Overall, cosmetics control is not coordinated in the EU to the same extent as e.g. food control. For example, we are not aware of audits (cf. EU FVO audits) or annual returns of the official cosmetics control activities of member states.

6.3 Official Control and Enforcement of Cosmetics Legislation in Ireland

6.3.1 National Control

Much progress has been made in the past three years to develop and strengthen the control of cosmetics products in Ireland. Some of these developments include:

- The Dept. of Health and Children, has formed a **Cosmetics Safety Steering Committee**, with

membership from the Department, HSE (EHOs and Laboratories), Irish Medicines Board (IMB) and the National Consumers Agency.

- **The HSE Cosmetics Control Group** coordinates nationally the regional and local activities (Inspections, RAPEX responses and initiations, sampling SOPs) of EHOs' cosmetics enforcement work. The Cork and Galway Public Analysts' Laboratories coordinate nationally their testing activities, in association with service users.

- A **HSE Steering Group** has been formed with a remit of examining cases of risk to health which arise in connection with specific instances of hazard/contamination in cosmetics.

- The National Standards Authority of Ireland (NSAI) has formed a working group on cosmetics standards.

- The process of transferring the function of Competent Authority from the Minister for Health and Children to the IMB is expected to be complete in the latter part of 2010.

The Department (DoHC), the IMB, NCA and HSE are involved to varying degrees (direct communication, workshops etc) in outlining clearly to the cosmetics Industry their general responsibility under the legislation, i.e. to market only safe and complying cosmetics products. Databases on the cosmetics industry in Ireland are being compiled to facilitate the process of communication and aid traceability. As is the case with the official control of both food and medicines, the main thrust of official cosmetics control should be to ensure that robust, effective safety/control systems are in place in industry.

Official surveillance of cosmetics has increased substantially. Interaction between the HSE and the IMB regarding future activities in cosmetic control in Ireland is underway currently. Through the DoHC, Ireland now submits an annual market surveillance programme to the EU, as is mandatory in EU legislation.



6.4 Results for 2009

Table 13 summarises testing of cosmetics performed in this laboratory in 2009.

Table 13: Summary of Cosmetics Testing Results 2009

Parameter(s)	Cosmetic Types	Samples Tested	Complying	Non-complying
Lead	Make-up	946*	920	26
Cadmium	Make-up	946*	943	3
Diethylene Glycol	Toothpaste	32	29	3
p-Phenylene-diamine	Hair Dyes, Eyelash dye kit	30	30	0
Hydrogen Peroxide	Hair Dyes etc.	22	22	0
Hydroquinone	Creams, Soaps	28	23	5
Mercury	Creams, Soaps	22	21	1
General Labelling Examination	Toothpaste, Hair Dyes, Eyelash dye kit, Creams.	76	30	46
Formaldehyde	Hair Treatment product	1	0	1

* 226 Samples consisting of 946 components were tested for Lead & Cadmium

6.4.1 Heavy Metals

226 samples (lipsticks, lip gloss, face-paints, blushers and make-up sets etc) were tested here for Lead (Pb) and Cadmium (Cd) in 2009. Many of the samples consisted of multi-component sets of different cosmetics types (e.g. powders and lipsticks) and colours. Overall 946 components (sub-samples) were tested. Tables 14a and 14b summarise the results obtained.

Table 14a: Lead Results for Cosmetics 2009

Lead (Pb)	
Results Range (mg/kg)	Number of Subsamples
<1.0	609
1.0 - 5.0	254
5.1 - 10.0	41
10.1 - 20.0	11
20.1 - 100	13
101 - 1,000	6
1,001 - 5,000	7
>5,000	5*
TOTAL	946

* Levels: 5,465; 6,451; 7,611; 7,973; 10,385mg/kg.

Table 14b: Cadmium Results for Cosmetics 2009

Cadmium (Cd)	
Results Range (mg/kg)	Number of Subsamples
<0.10	900
0.10 - 1.0	38
1.1 - 5.0	5
5.1 - 10.0	2
10.1 - 100	0
>100	1**
TOTAL	946

** Level: 2,217mg/kg

There are no specific limits set for Heavy Metals in the Cosmetics Directive or Regulations. However, Lead and its compounds are prohibited to be present in cosmetics (Cosmetics Regulations – S.I. No. 870/2004, Annex 2, entry 289), unless present in traces which are “...technically unavoidable in the context of good manufacturing practice...” (8.(2)), and not “...liable to cause damage to human health...” (7.(1)). A Lead (Pb) limit of 20mg/kg (limit initially developed by

BfR/Germany) has been adopted as an interim measure for official control purposes within the HSE.

In 2009, 31 components exceeded the Lead limit of 20 mg/kg.

Just 3 sub-samples contained Cadmium levels greater than 5 mg/kg, the limit set by Germany/ BfR.

The data from Tables 14a and 14b indicate that the majority of the tested sample components (91%) contained Lead levels of less than 5 mg/kg. The results show that cosmetics manufacturers can, and generally do, achieve lead levels of less than 5 mg/kg, and that 5 mg/kg (or a lower figure) may be considered as an appropriate upper limit for Lead in cosmetics (based on “.. good manufacturing practice..”). Similarly, the majority (99%) of components contain Cadmium at less than 1 mg/kg.

It is hoped that the above data can be used by the EU Commission to review the upper limit for Lead and Cadmium in cosmetics. It would be beneficial to have EU-wide legislative limits.

During the validation of a new X-ray Fluorescence instrument purchased by this laboratory in 2009, an orange lipstick component of a children’s cosmetic sample, (a separate component of which had been the subject of a RAPEX alert in 2008 for excessive lead levels), was found to contain an excessive level of Cadmium (1.2%). An investigation of this matter is ongoing.

Mercury was detected in one of the 22 samples tested (a facial cream containing 1,687mg/kg mercury, See 6.4.2 below).

6.4.2 Hydroquinone in Creams etc.

Hydroquinone products are popular for their skin-lightening properties in Asian and African cosmetics markets, and are often found in cosmetic products sold in “Ethnic” shops. These products are generally topical in nature (e.g. creams, oils, lotions) applied to lighten areas of darkened skin and localised blemishes such as freckles, chloasma (also known as melasma), age spots, and acne scars.

Under EU legislation, hydroquinone is permitted only as (a) an oxidising hair colouring agent, for professional

use only, at a maximum level of 0.3% and (b) in artificial nail systems, for professional use only, up to 0.02%. Hydroquinone (at any level) is prohibited for use as a skin-lightening agent.

During 2009 twenty eight samples, submitted by EHOs, were tested in the laboratory for hydroquinone. Five of these (18 %) were found to contain hydroquinone, up to a maximum concentration of 4 %. The figures represent a reduction in both sample numbers and non-complying samples from 2008, where 49 samples were tested with 23 (47%) found to be non-complying, indicating that targeted enforcement in this area appears to be having an effect. Further surveillance is planned for 2010.

The analysis of cosmetics found to contain hydroquinone and mercury resulted in the successful prosecution by the HSE (Blanchardstown EHOs) in April 2010 of the owner of an Ethnic shop in Dublin supplying these products.

6.4.3 para-Phenylenediamine in Hair Dyes

A non-programmed survey of 30 samples consisting of hair dyes and eyelash & brow Dye Kits taken in the North-western HSE area (Co. Donegal EHS) was carried out here for para-phenylenediamine, a permitted hair colourant with an upper limit of 6%. The majority of sample results were <2% para-phenylenediamine with only 2 samples showing higher results of 2.1% and 17.1%, respectively. The result of 17.1% was considered as being in compliance as the products were intended for dilution (bringing the concentrations down to below 6%) before use.

A new limit of 2% para-phenylenediamine comes into effect on July 15th 2010 (Directive 2009/130/EC).

6.4.4 Diethylene Glycol in Toothpastes

During 2009, 32 samples were tested for diethylene glycol (DEG). The samples were taken in early 2009 as part of a targeted, local (Co. Galway EHS) survey with an emphasis on low-priced toothpastes. Just one product (3 samples) in the 32 samples tested had levels of DEG which were non-compliant. These 3 samples had levels (4.0, 4.3 & 4.8%) greater than forty times the legislative limit of 0.1% (European Communities (Cosmetic Products) (Amendment) Regulations 2009

given effect by S.I. No. 191 of 2009). See section also section 6.4.8.



6.4.5 Hydrogen Peroxide

A non-programmed survey of 22 samples; consisting of hair dyes (8), eyelash & brow dye kits (8), perming solutions (2), crème bleaches (3) and teeth-whitening strips (1); were tested for hydrogen peroxide, which is permitted for use in hair-care and skincare preparations and oral hygiene products at levels of 12%, 4% & 0.1%, respectively. All samples were found to comply with the legislation (S.I. No.870/2004 – European Communities (Cosmetic Products) Regulation, 2004).

6.4.6 Labelling of Cosmetics

74 samples were examined in 2009 for compliance with the labelling requirements in the Cosmetics Regulations (S.I. No.870 of 2004). 44 samples were found to be non-compliant; these non-compliances related to the omission of some or all of the following labelling requirements: a manufacturer's address, conditions of use & warnings, storage symbols, dates of minimum durability and batch numbers.

6.4.7 Other Cosmetics' Testing

Further to a consumer complaint, a sample of hair treatment agent was received for analysis in late 2009. The sample upon analysis was found to contain excessive **formaldehyde** (2% vs. legislative limit of 0.2%), resulting in a product withdrawal and the issue of an EU RAPEX Alert in 2010. Further investigations, including testing, related to this incident are ongoing at time of writing (July 2010).

6.4.8 Summary of Cosmetics Hazard/Contamination Reports issued in 2009

The laboratory issued 3 Cosmetics Hazard / Contamination Reports to the EHO service in 2009, concerning Diethylene glycol in toothpaste (2 reports), and formaldehyde in a hair treatment product.

6.5 Overall Summary and Recommendations

The testing in 2009 again showed up a number of problems with cosmetics, in particular with the quality of some 'cheaper-brand'/low-cost cosmetics. A number of children's cosmetics products have been found to be contaminated with Lead and Cadmium.

The results indicate that in some cases Lead and Cadmium compounds are being used as ingredients (colours) in some cosmetics, despite the fact that only trace residues are permitted by the legislation. Such a lack of Quality Assurance at manufacturing level is of concern and it suggests a possible risk of other, more serious hazards arising.

Work is in place in Ireland to improve the overall control of the safety and legislative compliance of cosmetics in Ireland (see 6.3.1 above). This work should not be done in isolation from cosmetics control performed at EU level and in other member states. It is hoped that HSE staff (EHOs and Public Analyst Laboratory staff) can be facilitated in having access to the expertise and knowledge sharing of the EU working groups on cosmetics safety. This knowledge sharing will help in creating a more efficient cosmetic control system.

There is a need for consistently effective, official cosmetics control in EU member states, in particular with respect to the control (certification, sampling/analysis etc.) of cheaper imports. Some auditing by the EU of Cosmetics Control activities in member states is recommended.

Laboratory resources for Cosmetics testing are minimal. At present there are no laboratory staff with dedicated responsibility for cosmetic analysis. Programmed samples must be fitted into other work schedules, and staff have to be diverted from other areas within the service to cover Alert samples etc. Given the current economic climate, the provision of additional laboratory resources for the purpose of cosmetic analysis is unlikely to occur in the near future. Consequently, the service provided by this laboratory in this area will be limited. This position is helped to some extent by the partnership approach adopted between this laboratory and the Cork Public Analyst's Laboratory in the sharing of functions for the chemical analysis of cosmetics.



7. MISCELLANEOUS TESTING

17 'miscellaneous' samples were received in 2009. These included:

- 1 blood sample for a range of metals
- 2 samples of dust were analysed for lead content
- 2 samples of rodent droppings and 3 samples of insects/insect larvae
- 3 samples of water (one contained potassium permanganate, one was boiler deposit, and one was submitted for fluoride analysis)
- 1 food supplement for metals and 2 food samples for foreign matter
- 3 samples of 'Party Pills'

8. LABORATORY ACCREDITATION

8.1 Accreditation

Accreditation is a formal recognition of a laboratory's competence to carry out specific tests or types of tests. This recognition is based on compliance with a series of International and European Standards. Member states of the EU have established a network of national accreditation bodies which seeks to ensure that the competence of all laboratories are assessed to the same principles.

In Ireland, the Irish National Accreditation Board (INAB) is the body with responsibility for awarding accreditation, in accordance with the relevant ISO 17000 series of standards and guides. The current relevant standard for this laboratory is ISO/IEC 17025:2005 'General Requirements for the Competence of Testing and Calibration Laboratories'. The standard contains detailed requirements for both the management of laboratory operations and technical aspects such as method validation, measurement traceability and measurement uncertainty.

Twenty years ago in December 1989, this laboratory was first granted accreditation for testing Fluoride in Drinking Water. Over the last twenty years, the laboratory has continuously added to its list of accredited tests, and now is accredited for a wide range of analytes, using a variety of testing procedures in Water, Food and Pharmaceuticals products. A full list of our accredited tests is available on the Irish National Accreditation Board website:

<http://www.inab.ie/schemes/lab/testing/directory.html>

8.2 Irish National Accreditation Board (INAB) Surveillance Visit

The laboratory receives regular audits from INAB. Their purpose is to determine whether a laboratory is continuing to comply with the international ISO/IEC 17025 standard and INAB Regulations.

In 2009, our annual INAB audit took place in December. At this audit we again added to our scope of accreditation in all areas of the laboratory. In the Food section we gained accreditation for Freezing Point Depression, Extraneous Water and Titratable Acidity in

Dairy Products. In the Water section, accreditation was expanded to include Cadmium using Inductively Coupled Plasma Mass Spectroscopy (ICP-MS) and extension of our accredited range for Volatile Organic Compounds. In the Pharmaceutical laboratory we were awarded a flexible scope for a list of tests involving the Assay and Identification of Drugs and Pharmaceuticals. In addition to the extensions mentioned above, we were also successful in maintaining accreditation for our existing scope.



8.3 Proficiency Testing

The ISO 17025 International standard states that 'the laboratory shall have quality control procedures for monitoring the validity of tests undertaken'. As part of this monitoring it recommends participation in inter-laboratory comparisons or proficiency testing schemes. This laboratory participates in a range of international proficiency testing schemes. These schemes involve receiving and analysing test samples with unknown concentrations of analyte.

In 2009 we participated in a large number of proficiency testing rounds, covering a wide range of parameters and analytical procedures (see table). The results are monitored and to date, our record in proficiency testing is excellent.

Proficiency Testing Schemes – 2009

Scheme	Parameters Tested
FAPAS	Nutritional components - Nitrogen, Moisture, Ash, Fat
FAPAS	Sodium – Snack Food, Juice, Meat
FAPAS	Aflatoxins – B₁, B₂, G₁, G₂, Total Aflatoxins
FAPAS	Fumonisin – B₁ and B₂
FAPAS	Trace Elements in food (Lead, Cadmium, Mercury)
FAPAS	Environmental Contaminants – Benzo[a]pyrene
FAPAS	3-MCPD
FAPAS	Allergens Histamine, Gluten
FAPAS	Juice and Jam - pH, Brix
FAPAS	Food Additives – Sulphur Dioxide (Fruit slurry, meat)
FAPAS	Alcoholic Strength
FAPAS	Butterfat
CHEK	Sorbic Acid, Benzoic Acid, Sulphite (wine)
CHEK	Histamine
Quasimeme	Shellfish - Domoic and Epi-domoic Acid.
Quasimeme	Shellfish – Okadaic Acid, DTX toxins, AZA toxins – new in 2009
QDCS	Dairy Products: Acid Titration, Freezing Point Depression, Total Solids, Phosphatase, Antibiotics
FOBS	Foreign Body Identification (Foods)
AQUACHECK	Water- Alkalinity, Hardness, Colour, Turbidity, Conductivity, pH, Fluoride, Chlorine, <i>Food – pH, Pharmaceuticals – pH</i>
AQUACHECK	Water – Nitrate, Nitrite, TON, Ammonia
AQUACHECK	Water- Volatile Organic Compounds.
AQUACHECK	Water – Aluminium, Arsenic, Boron, Cadmium, Chromium, Iron, Manganese, Copper, Lead, Nickel, Selenium, Zinc.
EDQM	Pharmaceutical Analysis – Assay by HPLC, Assay by UV, Dissolution Testing, Loss on Drying, Optical rotation, Related substances by HPLC,
LGC	Pharmaceutical Analysis – Dissolution Testing
LGC /Pharmasure	Pharmaceutical Analysis- Assay by HPLC, UV spectroscopy, pH, Density, Melting Point, Related substances TLC.
UKNEQAS	Alcohol in Biological samples

9. STAFF TRAINING

The need for staff training and on-going professional development are emphasised in both the Service Contract with FSAI and various specific legislation relating to food control. Both internal and external training is offered to staff in the use of Analytical Methods and Instrumentation, Information and Communication Technology and Dignity at work.

Staff attended Seminars and Conferences both on analytical and on general subjects, pertaining to Food Safety (e.g. Allergens Workshop organised by safefood

and Nutritional Labelling Workshop organised by FSAI).

In-house induction and HSE induction training is provided for all new staff. General management training has also been undertaken. Due to budgetary constraints staff training was reduced significantly this year. Most of the training received was provided on a budget neutral basis. Important training, which could lead to further improvements and developments in the service, was not availed of due to the significant expense involved.

10. MEETINGS/COMMITTEES

FSAI:

- Liaison Meetings with Public Analysts' Group
- Service Contract Meetings with Western Area HSE
- Gluten Working Group
- EHO-PAL Liaison Group
- Molluscan Shellfish Safety Committee
- Inter-Agency Meetings on Food Control
- Legislation Committee (FSAI-Dept. of Health & Children...)
- Folic Acid Implementation Group
- Cross Agency Labelling Enforcement Working Group
- Scientific Sub-committee [Additives, Contaminants...]

safefood/HSE:

IT system for Laboratory Service

safefood Allergens Training Board

HSE Regional Food Committee

[HSE West]

HSE Food Sampling Review Group

Cosmetics Control Group HSE

Cosmetics Steering Group HSE

Dept. of Health & Children Cosmetics Steering/RAPEX Group

Zoonoses Committee

[Western Region]

I.A.P.A.L.:

The Irish Association of Public Analysts' Laboratories

Fluoridation Committee

[HSE West]

HSE/County Council Water Group Meetings

HSE Water Group Meetings

Chemistry Network of Accredited Laboratories:

Forum for Quality Managers from INAB Accredited Chemistry Laboratories

Irish Medicines Board:

Liaison Meetings

EDQM European Network of Official Medicines Control Laboratories:

Annual Meeting

NSAI:

Working group on the revision of Irish Standard 432 (I.S. 432:2009) on bottled ground water

11. INFORMATION AND COMMUNICATION TECHNOLOGY

The LabWare laboratory information management system (LIMS), funded nationally by *safefood* has been 'live' since 01 January 2007. The LIMS is in continuous use in the laboratory and is undergoing expansion and development as a result of funding provided by the Department of Finance and also as a result of user and administrator training courses funded by *safefood*. This development has included the integration of various instruments, involved in water and pharmaceutical analysis, into the LIMS enabling paperless transfer of results. In 2008 an electronic reporting link was set-up between this laboratory and the FSAI, using the government VPN (Virtual Private Network), whereby summaries of all relevant sample details and results are automatically created and sent to the FSAI for inclusion in a national database of food testing. Further development of the LIMS was planned in 2009 (connection to the EPA Environmental Data Exchange Network (EDEN)) but this project was paused until at least the second half of 2010 while a new national information technology system for the Environmental Health Services in the HSE is procured. Once this is in place, it is anticipated that the HSE Public Analysts Laboratories and Public Health Microbiology laboratories will be connected to both the EHS and EDEN systems via the LabWare LIMS.

Appendix I. Outline Summary of HSE West Food Sampling/Analysis (Chemical) Programme for 2009

Jan 07 – 15	Various Port Fish (Biogenic Amines)	3x9		Specified Seeds (Sunflower, Poppy, Sesame, etc) (Pb, Cd, As)	20			
Jan 16 – 31			Food Supplements (Food Irradiation, Labelling etc.)	60	Miscellaneous Foods (Sorbates / Benzoates, pH)	50	'Ethnic' Foods From Ethnic Premises (General Examination & Labelling, etc.)	40
Feb. 1 – 15	Various Port Fish (Biogenic Amines)	3x9			"Ready" Meals with labelled Salt / Na & Fat Levels (Salt (Na/K), Fat)	30	Specified Foods FSAI Salt Survey (Na/K)	100
Feb. 16 – 29			Sulphited Foods Prawns, Shrimps, Crab, Dried Apricots (SO ₂)	50				
Mar. 1 – 15	Various Port Fish (Biogenic Amines)	3x9	Food Supplements (Benzo-(a)-pyrene)	25	Caseinates etc (Pb) Dept Ag, Food, & RD	15	Folic Acid Method Development	
Mar. 16- 31	Peanut Butter & Satay Sauces Basmati Rice (Aflatoxins)	15 15	Infant & Follow on Formula (Iron, Minerals, Labelling...)	20				
Apr. 1- 15			Maize Meals Corn Products (Fumonisin / Aflatoxins)	15 15			Shellfish (ASP Toxins)	10
Apr. 16 – 30	Canned Fish in Oil (Benzo-(a)-pyrene)	25	Nutritional Claims Survey Imported Foods of Animal Origin with Labelled Claims (Na/K)	50	Gluten Free Foods Listed in Coeliac Society Book (Gluten)	35	Specified Foods Herbs, Spices & Aromatic Seasonings. (Food Irradiation)	60
May 1 – 15		ca. 300 total			Breakfast Cereals (Iron / Sodium / Minerals General Labelling / Claims)	30		
May 16 – 31	SAFEFOOD SURVEY "GLUTEN-FREE" MEALS RESTAURANT / CATERING STAGE		Nutritional Claims Survey Imported Foods of Animal Origin, Foods labelled "Low Fat" (Fat)	20	Body Building Supplements - PARNUTS (General Examination, Labelling, etc.)	40	Local Production Foods (General / Compositional, Labelling Examination...)	50
June 1 – 15	Gluten Testing		Various Sulphited Foods Dried Potato Products, Sausages, Burgers, etc.	50			Caseinates etc. (Pb)	15
June 16 – 30	Scombroid Fish etc. (Biogenic Amines)	30	Prepared Meals Cooked on premises Meals (Salt (Na/K))	40	Whiskey, Gin, Vodka (Adulteration)	50	Shellfish (ASP, DSPs, AZAs)	10

Appendix I. Outline Summary of HSE West Food Sampling/Analysis (Chemical) Programme for 2009 (continued)

July 1 – 15	3x9 Various Port Fish (Biogenic Amines)	40 Soft Drinks, Beers, Wines (Benzene/SO ₂ /Other)	50 Bottled Waters (Pb, Cd, Minerals / Flouride, Benzene, General Labelling)	
July 16 – 31		50 Dairy Products Milk, Cream, Goats Milk etc. (ALP, Delvo Test..)		40 'Ethnic' Foods From Ethnic Premises (General Examination & Labelling, Pb/Cd/As)
Aug. 1 – 15	30 National Claims Survey Imported Foods of Animal Origin (Protein)		25 Food Supplements & Canned Fish in Oil (Benzo-(a)-pyrene)	
Aug. 16 – 31	30 Scombroid Fish, etc. (Biogenic Amines)	100 Specified Foods FSAI Salt Survey (Na/K)	60 Ceramic Drinking Vessels (Pb, Cd,...)	Allergen Labelling Method Development (Peanut Protein and/or Milk Protein)
Sept. 1 – 15	2x9 Various Port Fish (Biogenic Amines)	FSAI Only		10 Molluscan Shellfish (ASPs, DSPs, AZAs)
Sept. 16- 30	60 Raw Meats Poultry & Pork (Anti-Bacterial Substances)	35 Gluten Free Foods From Pharmacies, Health Food Stores, Supermarkets, etc. (Gluten)	30 Imported Shellfish Jarred, Canned, Frozen, etc (Pb, Cd, As)	15 Caseinates etc. (Pb) Dept Ag, Food & RD
Oct. 1- 15	2x9 Various Port Fish (Biogenic Amines)		40 Coffee Beans, Ground or Instant (Pb, Cd, As)	
Oct. 16 – 31	50 Sulphited Foods Prawns, Shrimps, Crab, Dried Apricots (SO ₂)		40 Specified Foods Dried Potato, Ready to Eat Potato products in Skin, Salad Creams, Tartar Sauces (Pd,Cd,As)	
Nov. 1 – 15	3x9 Various Port Fish (Biogenic Amines)	30 Specified Foods Peanut Butter, Marzipans & Ground Almonds (Aflatoxins)		60 Miscellaneous Foods (Irradiation)
Nov. 16 – 30		30 PARNUTS Samples (General / Compositional, Labelling)	40 Specified Fish Tuna, Marlin, Swordfish (Mercury)	
Dec. 1 – 15	3x9 Various Port Fish (Biogenic Amines)	35 Gluten Free Foods (Gluten)	15 Caseinates etc. (Pb) Dept Ag. Food & RD	
Dec. 16 – 31	Non Routine Samples Only	Non Routine Samples Only	Non Routine Samples Only	Non Routine Samples Only
Jan - Dec	- Food Complaints, Food 'Alerts' etc., 'suspect' samples and tap waters from food premises (where relevant) - 'Inspection' samples of Manufacturing/ Processing etc. premises when required.			

Appendix 2: Routine Official samples received from H.S.E. West, for the period from 01/01/2009 to 31/12/2009
Appendix 2: Food Complaint samples (from H.S.E. West & the Public) from 01/01/2009 to 31/12/2009

Food Category	No. of Samples with Infringements		Chemical / Physical Contamination		Compositional		Labelling (1) & Presentation		Other		No. of Samples Received		% with infringements	
	Routine	Complaint	Routine	Complaint	Routine	Complaint	Routine	Complaint	Routine	Complaint	Routine	Complaint	Routine	Complaint
1. Dairy Products	16	6	1	4	0	2	15	0	0	0	80	10	20.00	60.00
2. Egg and Egg Products	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
3. Meat and Meat Products, Game and Poultry	18	2	0	1	3	1	15	0	0	0	224	9	8.04	22.22
4. Fish, Shellfish and Molluscs	24	2	13	1	4	0	7	1	0	0	274	4	8.76	50.00
5. Fats and Oils	0	0	0	0	0	0	0	0	0	0	3	0	0.00	0.00
6. Soups, Broths and Sauces	4	0	0	0	0	0	4	0	0	0	60	0	6.67	0.00
7. Cereals and Bakery Products	35	11	3	10	1	0	31	1	0	0	188	18	18.62	61.11
8. Fruit and Vegetables	6	1	0	1	1	0	5	0	0	0	147	6	4.08	16.66
9. Herbs and Spices	5	0	0	0	0	0	5	0	0	0	69	0	7.25	0.00
10. Non-Alcoholic Beverages	16	11	0	6	2	5	14	0	0	0	125	20	12.80	55.00
11. Wine	3	0	0	0	0	0	3	0	0	0	15	0	20.00	0.00
12. Alcoholic Beverages (Other than Wine)	0	0	0	0	0	0	0	0	0	0	38	0	0.00	0.00
13. Ices and Desserts	1	0	0	0	0	0	1	0	0	0	3	0	33.33	0.00
14. Cocoa and Cocoa Preparations, Coffee & Tea	2	0	0	0	0	0	2	0	0	0	58	2	3.45	0.00
15. Confectionery	5	3	0	1	0	1	5	1	0	0	43	3	11.63	100.00
16. Nuts and Nut Products, Snacks	5	1	3	0	0	1	2	0	0	0	54	5	9.26	20.00
17. Prepared Dishes	11	6	1	6	0	0	10	0	0	0	130	8	8.46	75.00
18. Foodstuffs Intended For Special Nutritional Uses	1	1	0	1	0	0	1	0	0	0	26	2	3.85	50.00
19. Additives	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00
20. Materials & Articles intended to come into contact with Foodstuffs	5	0	0	0	5	0	0	0	0	0	53	1	9.43	0.00
21. Others	7	6	0	6	0	0	7	0	0	0	62	12	11.29	50.00
Totals	164	50	21	37	16	10	127	3	0	0	1652	100	9.93	50.00

Appendix 3: Outline of Principal Official Surveillance of Foodstuffs in Ireland (RoI)

Department/Agency	Principal Food Categories	Principal Sampling Stage(s)	Principal Sampling Officers	Principal Official Laboratories ¹	Test Parameters and Groups
Department of Agriculture Fisheries & Food (DAFF)	Animal Origin Foods (Meats, etc.) Cereals, Fruit/Veg, etc. Milk/Dairy, etc. Fish, Shellfish, etc.	'Production' etc Meat Plants, Farms, etc. Wholesale etc, Dairy Plants, etc. Fishing Boats, Processing plants, Fish Farms, etc.	DAFF Veterinary Officers etc & Agricultural Officers, etc. Sea Fishery Officers etc. (Sea Fisheries Protection Authority (SFPA))	Meat Control Laboratory National Food Centre Labs State Laboratory Pesticides Laboratory Dairy Science Labs Marine Institute (also BIM Lab)	Microbiology & Veterinary Residues, Contaminants, etc. Pesticides etc, Microbiology, Residues etc, Microbiology (incl. virology), Marine Biotoxins, Residues & Contaminants etc.
Health Service Executive (HSE)	All foodstuffs including: Food Contact Materials.	All stages Retail, Wholesale, Manufacturing, Catering, Import, etc.	HSE Environmental Health Officers	HSE Food Microbiology Labs & HSE Public Analysts' Labs ²	Microbiology Contaminants, Complaints, Compositional & Additives, Nutritional, Labelling, etc.
Local Authorities	Meat, Dairy...	'Production', etc.	Veterinary Officers, etc.	Local Authority Labs, Dept. of Agriculture, Labs, etc.	Microbiology, Residues, etc.
Radiological Protection Institute of Ireland (RPII)	Marine products, Meats, Others	Any stage	Various	Radiological Protection Institute of Ireland	Ionising Radiation...
FSAI (surveys)	Any Foodstuff	Any stage	FSAI, etc.	Dependent on Testing Parameter(s) and lab. capacity	'New' Parameters of concern. Any Other Parameter.

¹ Some testing also performed by the Veterinary Laboratory Service, including the Central Veterinary Research Laboratory, and by the Interim Salmonella Reference Laboratory, UCHG, Galway; also see Directory of Food Safety Laboratory Services, safe food, for more details on food testing labs in Ireland.

² The Public Analysts' Laboratory Service operates a system of Core Testing (regional and local service) and Specialisations (national service).

Core Testing: Microscopy/Complaints; General Labelling; Pb/Cd; ELISA; Fat; Protein; Moisture etc.
Some **Specialisations** include:

- **Dublin PAL:** Food Contact Materials (Overall Migration, BADGE; Furan, Aromatic amines, ESBO, ITX etc.); Acrylamide and Melamine; Mycotoxins Import; Allergens (Peanut, Egg & Celery Protein etc.); PAHS (x 16); Others.
- **Cork PAL:** Pesticides (Infant Formula.); GMO Testing; Vitamins (A, B, C, D, E.); Congeners (spirits etc.); Oil Profiles (Saturated/Unsaturated etc.); Food Irradiation screening; Cosmetics (UV filters, phthalates etc.); Others
- **Galway PAL:** Pharmaceuticals (IMB); Folic Acid; Marine Biotoxins; 3-MCPD; Benzene; Benzo-[a] pyrene; Food Irradiation; Cosmetics (p-PDA, DEG etc.); YOCs in Drinking & Bottled Waters; 'Salt' (Na/K) national surveys; Others.

A Service is also provided to Agencies other than HSE; some such testing performed to date includes: FSAI ('Salt' – National Salt Reduction Programme; Folic Acid – National Fortification/Monitoring Programme; others); SFPA (Biogenic amines, SO₂ etc.); DAFF/LAs (Compositional/Labeling testing; Nitrates/Nitrates; Gluten etc.);

Appendix 4. Annual Results Food Contaminants etc. PAL Galway (results for all foods tested).

Parameter	Non - Complying or "Excessive" Samples/Total Samples Tested.										
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Aflatoxins	8/151 5.3%	11/179 6.1%	12/254 4.7%	3/133 2.3%	4/250 1.6%	8/231 3.5%	6/233 2.6%	13/220 5.9%	8/220 3.6%	1/149 0.7%	3/115 2.6%
Fumonisin	0/41 0%	2/21 9.5%	0/121 0%	1/72 1.4%	1/86 1.2%	1/44 2.3%	0/52 0%	0/51 0%	0/24 0%	1/10 10.0%	3/40 7.5%
Ochratoxin A	1/54 1.9%	0/152 0%	1/174 0.6%	3/88 3.4%	0/83 0%	2/109 1.8%	1/109 0.9%	N/T	N/T	N/T	N/T
Patulin	0/14 0%	0/52 0%	0/75 0%	0/27 0%	0/4 0%	N/T	0/52 0%	N/T	N/T	N/T	N/T
Lead (Pb)	3/165 1.8%	1/184 0.5%	0/173 0%	3/249 1.2%	0/170 0%	0/330 0%	1/248 0.4%	1/143 0.7%	2/479 0.4%	2/512 0.4%	4/422 0.9%
Cadmium (Cd)	1/168 0.6%	0/184 0%	0/172 0%	0/249 0%	0/120 0%	0/273 0%	0/205 0%	0/130 0%	2/403 0.5%	0/512 0%	1/415 0.2%
Mercury (Hg)	0/8 0%	0/16 0%	0/36 0%	2/47 4.3%	0/96 0%	2/140 1.4%	0/176 0%	0/74 0%	0/54 0%	0/20 0%	4/169 2.4%
Arsenic (As)	N/T	NT	1/134 0.7%	1/99 1.0%	0/188 0%	0/154 0%	0/42 0%	0/47 0%	0/163 0%	0/238 0%	0/51 0%
Benzo-[a]-pyrene	0/27 0%	0/1 0%	28/99 28.3%	9/152 5.9%	4/282 1.4%	2/84 2.4%	2/75 2.7%	2/98 2.0%	19/102 18.6%	0/115 0%	0/65 0%
3-MCPD	30/39 76.9%	15/60 25%	9/163 5.5%	1/94 1.1%	0/90 0%	0/62 0%	0/35 0%	2/73 2.7%	0/96 0%	0/30 0%	N/T
Nitrates	3/57 5.3%	0/58 0%	N/T	N/T	N/T	N/T	0/42 0%	0/39 0%	0/35 0%	0/3 0%	N/T
Marine Biotoxins: DSPs	0/100 0%	0/173 0%	1/211 0.5%	0/133 0%	0/103 0%	0/99 0%	1/52 1.9%	0/21 0%	0/11 0%	0/20 0%	1/22 4.5%
AZAs	N/T	N/T	0/211 0%	0/143 0%	0/108 0%	0/108 0%	0/47 0%	0/20 0%	0/29 0%	0/20 0%	1/23 4.3%
ASPs	N/T	N/T	0/211 0%	0/140 0%	0/108 0%	0/65 0%	0/41 0%	0/23 0%	0/39 0%	0/36 0%	0/30 0%
Gluten Gluten Free (GF) Foods	9/40 22.5%	2/94 2.1%	13/236 5.5%	8/278 2.9%	22/240 9.2%	11/252 4.4%	15/134 11%	4/144 2.8%	1/175 0.6%	2/102 2.0%	17/394 4.3%
Benzene	8/57 14.0%	7/111 6.3%	1/53 1.9%	5/50 10.0%	N/T	N/T	N/T	3/90 3.3%	0/64 0%	0/29 0%	0/58 0%
Anti-bacterial Substances (ABS) EC 4-Plate Test	4/269 1.5%	0/209 0%	0/48 0%	0/95 0%	0/119 0%	0/69 0%	0/73 0%	0/38 0%	0/37 0%	0/38 0%	0/51 0%
AV/DPTGs(Oils)	14/56 25.0%	26/108 24.1%	17/70 24.3%	15/82 18.3%	14/74 18.9%	4/62 6.5%	6/37 16.2%	2/17 11.8%	9/32 28.1%	5/27* (18.5%)	N/T
Histamine/ Biogenic Amines	6/140 4.3%	1/125 0.8%	3/214 1.4%	1/97 1.0%	1/297 0.3%	1/114 0.9%	6/129 4.7%	4/139 2.9%	16/131 12.2%	2/128 1.6%	15/320 4.7%
Sorbates/ Benzoates	4/191 2.1%	15/172 8.7%	0/54 0%	6/105 5.7%	2/63 3.2%	18/163 11.0%	3/46 6.5%	2/36 5.6%	2/59 3.4%	6/72 8.3%	0/47 0%
Sulphites	10/219 4.6%	9/195 4.6%	8/179 4.5%	1/195 0.5%	1/120 0.8%	6/444 1.4%	7/135 5.2%	6/198 3.0%	1/166 0.6%	8/190 4.2%	8/206 3.9%
Nitrites / Nitrates	13/145 9.0%	18/172 10.5%	27/170 15.9%	17/209 8.1%	7/172 4.1%	4/282 1.4%	10/158 6.3%	13/85 15.3%	11/94 11.7%	2/64 3.1%	0/8 0%
Artificial Sweeteners (i.e. Acesulfame K, Aspartame & Saccharin)	10/38 26.3%	8/45 17.8%	N/T	0/35 0%	0/8 0%	1/2 50.0%	4/208 1.9%	0/38 0%	N/T	0/41 0%	0/3 0%
Food Irradiation	0/67 0%	0/35 0%	0/191 0%	0/57 0%	0/115 0%	3/248 1.2%	19/246 7.7%	3/291 1.0%	2/335 0.6%	0/253 0%	2/136 1.5%
Food Complaints	154/233 66.1%	129/206 62.6%	180/239 75.3%	147/226 65.0%	149/241 61.8%	108/183 59.0%	84/136 61.8%	77/122 63.1%	77/129 59.7%	69/126 54.8%	50/100 50%

N/T = Not tested.

* Results exceed Dutch DPTGs limit of 15% or Acid Value of 4.0 (results not designated as "non-complying").

Appendix 5: Fluoridation of Water Supplies – HSE West for 2009

FLUORIDATION OF WATER SUPPLIES :- GALWAY

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Ballinasloe	12	0.69 – 0.94	0.73
Carna	6	<0.10 – 0.12	<0.10
Clarinbridge / Kilcolgan	6	0.54 – 0.83	0.66
Clifden	12	<0.10 – 0.64	0.55
Dunmore / Glenamaddy	12	0.67 – 0.74	0.70
Galway City	108	0.60 – 0.78	0.69
Kinvara	15	<0.10 – 1.56	0.35
Luimnagh Waterworks	17	0.58 – 0.68	0.62
Mid-Galway Regional	12	0.49 – 0.72	0.53
Mountbellow	12	0.79 – 0.85	0.81
Oughterard	13	0.51 – 0.74	0.62
Portumna	12	0.50 – 0.84	0.71
Spiddal	12	0.40 – 0.85	0.66
Tuam R.W.S	15	0.60 – 0.72	0.66

FLUORIDATION OF WATER SUPPLIES :- MAYO

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Achill	15	0.59 – 0.88	0.74
Ballina	24	0.53 – 0.75	0.65
Erris	12	0.53 – 0.72	0.66
Kiltimagh	11	0.37 – 0.71	0.66
Lough Mask Regional	12	0.69 – 0.82	0.76
Shrule	12	0.58 – 0.74	0.65
Swinford	12	0.63 – 0.89	0.67
Westport	12	0.46 – 0.80	0.62

FLUORIDATION OF WATER SUPPLIES :- ROSCOMMON

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Ballinlough	12	0.16 – 0.77	0.60
Boyle / Ardcarne	12	0.13 – 0.68	0.16
Castlerea Regional	11	0.74 – 0.85	0.78
Castlerea Urban	12	0.75 – 0.95	0.81
Cortober	2	0.14 – 0.29	0.22
Mount Talbot / Four Roads	12	0.37 – 0.51	0.45
North East Regional	11	0.20 – 0.94	0.82
North Roscommon Regional	13	0.12 – 0.82	0.60
Roscommon Town (Central)	11	0.31 – 0.92	0.82
South Roscommon Regional	12	<0.10 – 0.31	0.25

Appendix 5: Fluoridation of Water Supplies – HSE West for 2009

FLUORIDATION OF WATER SUPPLIES :- DONEGAL

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Buncrana	18	0.59 – 0.86	0.73
Bundoran	16	<0.10 – 0.74	0.66
Cardonagh Mixed	15	0.63 – 0.77	0.72
Cranford	11	0.67 – 0.84	0.73
Cresslough / Dunfanaghy	15	0.55 – 0.83	0.73
Donegal / Eske	19	0.64 – 0.78	0.71
Falcarragh / Gortahork	11	<0.10 – 0.89	0.66
Frosses / Inver	15	0.15 – 0.71	0.25
Glenties / Ardara	9	<0.10	<0.10
Inishowen East	12	0.67 – 0.78	0.73
Letterkenny	33	0.67 – 0.82	0.76
Lettermacward	10	0.68 – 0.76	0.69
Lough Mourne	20	<0.10 – 0.97	0.62
Milford	11	<0.10 – 0.83	0.63
Rosses Regional	21	<0.10 – 0.72	0.63

FLUORIDATION OF WATER SUPPLIES :- SLIGO/LEITRIM

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Kinsellagh	10	<0.10 – 0.79	<0.10
Lough Gill	40	0.57 – 0.80	0.74
Lough Easkey	11	0.50 – 0.90	0.59
Lough Talt	11	<0.10 – 0.91	0.74
North Leitrim Regional	8	<0.10 – 0.12	<0.10
South Leitrim Regional	18	0.29 – 0.77	0.66
Sligo North Regional Supply	14	<0.10 – 0.74	0.54
Sligo South Regional	11	0.53 – 0.72	0.61
Kiltaraght	12	0.13 – 0.23	0.15

FLUORIDATION OF WATER SUPPLIES :- LIMERICK

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Abbeyfeale	12	<0.10 – 0.66	0.64
Adare	12	<0.10 – 0.79	0.48
Ballyneety	5	0.66 – 0.79	0.68
Clouncagh	12	0.57 – 0.72	0.61
South West Regional/Mount Plummer	12	0.65 – 0.91	0.75
South West Regional/Gurrane	12	0.54 – 0.73	0.61
Kilmallock	12	<0.10 – 0.81	0.74
Limerick City	13	0.60 – 0.71	0.67
Newcastle West	12	<0.10 – 0.68	0.63
Rathkeale	12	0.42 – 0.79	0.68

Appendix 5: Fluoridation of Water Supplies – HSE West for 2009

FLUORIDATION OF WATER SUPPLIES :- CLARE

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Clarecastle	7	0.46 – 0.80	0.66
Ennis	28	0.34 – 0.81	0.66
Ennistymon	12	0.58 – 0.84	0.71
Kildysart	7	0.56 – 0.78	0.64
Kilkee	8	0.68 – 0.81	0.76
Lisdoonvarna	9	0.68 – 0.81	0.71
Milltown Malbay	11	0.50 – 0.89	0.78
Shannon	10	0.54 – 0.79	0.75
West Clare New Doolough	12	0.64 – 0.81	0.73
West Clare Old Doolough	10	0.64 – 0.82	0.76
Limerick	11	0.56 – 0.73	0.67

FLUORIDATION OF WATER SUPPLIES :- NORTH TIPPERARY

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Castleconnell	12	0.39 – 0.72	0.65
Clareville	10	0.28 – 0.70	0.66
Murroe	11	0.58 – 0.77	0.72
Nenagh	13	0.50 - 0.64	0.57
Roscrea	12	0.63 – 0.74	0.68
Thurles	24	<0.10 – 0.88	0.68

Appendix 6:

Concentration of Smoke & Sulphur Dioxide in the atmosphere during 2009 at the Bodkin Roundabout site.

	Microgrammes Per Cubic Metre					
	Smoke			Sulphur Dioxide		
	Average Reading	Lowest Reading	Highest Reading	Average Reading	Lowest Reading	Highest Reading
January	5	1	43	21	1	61
February	6	1	19	29	8	52
March	4	1	16	26	11	51
April	2	1	9	35	6	57
May	2	1	6	41	8	81
June	4	1	12	55	4	119
July	3	1	10	24	6	45
August	2	1	10	15	4	41
September	7	1	22	24	6	46
October	7	1	38	15	1	30
November	5	1	24	10	1	28
December	6	1	13	15	1	31
Average	4	1	19	26	5	54

Appendix 6:

Concentration of Smoke & Sulphur Dioxide in the atmosphere during 2009 at Galway Waterworks.

	Microgrammes Per Cubic Metre					
	Smoke			Sulphur Dioxide		
	Average Reading	Lowest Reading	Highest Reading	Average Reading	Lowest Reading	Highest Reading
January	4	1	16	30	8	49
February	2	1	18	25	7	45
March	2	1	5	19	6	33
April	2	1	7	29	1	73
May	2	1	5	16	4	42
June	2	1	12	26	14	42
July	2	1	5	13	1	30
August	1	1	4	11	4	21
September	2	1	10	21	1	43
October	1	1	4	15	6	24
November	2	1	12	12	1	29
December	2	1	11	19	4	32
Average	2	1	9	20	5	39

Appendix 6:

PM₁₀ RESULTS MASS CONCENTRATION (M.C) µg/m³ 2009

Station: Bodkin Roundabout - Galway City Council - 24 Hour M.C. µg/m³

Day	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
01	36	24	12	19	20	14	13	-	10	7	-	-
02	36	14	-	26	14	18	13	-	7	6	-	-
03	39	20	-	18	8	15	9	-	6	10	-	-
04	42	13	7	11	11	16	9	-	9	8	-	-
05	29	11	17	12	-	13	9	16	13	10	-	-
06	-	27	17	10	16	-	5	15	5	-	-	-
07	-	13	14	8	18	-	8	8	12	-	-	-
08	-	20	8	10	14	-	8	6	10	-	-	5
09	-	17	11	6	7	13	6	4	14	-	-	14
10	11	25	19	8	13	8	9	5	19	-	-	17
11	10	19	11	10	20	6	5	4	17	10	-	20
12	23	22	28	13	22	14	14	8	18	12	-	25
13	15	<5	16	8	22	50	9	7	11	12	-	28
14	59	17	22	14	17	13	10	-	16	-	-	15
15	-	15	17	17	9	11	6	6	10	-	-	10
16	20	19	23	28	8	9	10	12	13	-	-	7
17	17	21	24	31	9	6	5	9	18	-	-	14
18	17	28	44	24	5	11	5	6	14	-	-	26
19	12	22	41	18	6	11	6	6	11	-	-	18
20	13	30	57	16	8	10	7	9	11	10	-	8
21	8	13	25	11	6	6	7	8	14	-	-	16
22	16	11	17	15	4	-	7	9	12	-	-	20
23	22	15	15	12	7	-	20	6	13	-	-	23
24	11	14	13	6	12	17	7	10	10	-	-	21
25	21	17	15	8	7	24	9	11	10	-	-	14
26	-	17	10	15	12	17	12	-	3	-	-	5
27	-	12	8	5	10	12	12	10	4	-	-	19
28	-	13	15	15	11	10	10	14	6	-	-	20
29	13		8	17	10	11	17	11	5	-	-	9
30	18		9	9	13	9	-	5	5	-	-	4
31	32		14		13		-	6		-		-
Monthly Mean	23	18	19	14	12	14	9	8	11	9	-	16
No. of Days exceeding 50µg/m³	1	0	1	0	0	0	0	0	0	0	-	0

No. of Days exceeding 50µg/m³ YEAR 2009 : 2

ANNUAL MEAN = 14

Appendix 7.



Public Analyst:

Mr. Rory Mannion

Deputy Public Analyst:

Dr. Anne Bruzzi (Retired 30/11/2009)

Deputy Public Analyst:

Dr. Pdraig Burke

Quality Manager:

Dr. Helena McGrath

Executive Analytical Chemists:

Ms. Sharon Crowe
Dr. Michelle Cuffe
Dr. Caroline Lardner
Dr. Brenda Lennon
Dr. Christopher Laffey
Dr. Andrew Flanagan
Dr. Leonie Wallace
Dr. Declan Costello
Dr. Katie Coyle
Dr. Gayle Kealy

Chief Technician:	Vacant (Since Aug 2007 due to embargo)
Senior Laboratory Technicians:	Mr. John Creaven Mr. Martin Patten Ms. Mary Finan Ms. Patricia Thornton Ms. Eithne Clasby Ms. Elaine Goldrick Ms. Suzanne Davoren
Laboratory Technicians:	Ms. Cecily Gilmore Mr. Martin Gilligan Ms. Noelle Brennan Mr. Tom Fogarty Mr. Eric Costello Ms. Caitriona Greaney Ms. Sylvia O'Flynn Ms. Nora Madden Ms. Amanda McCarron Ms. Deirdre Muldoon Ms. Aileen Maughan Mr. Tommy Heneghan Ms. Mary Rabbitte (Career break up to 31/03/09) Ms. Caroline Lupton Ms. Louise Mannion Ms. Hilary Hardy
Asst. Staff Officer:	Ms. Mary Mulvaney
Clerical Officers:	Ms. Eileen Mannion Ms. Attracta Lohan Ms. Aine Mahoney Vacant position (Since Oct 2007 due to embargo)
Housekeeper:	Ms. Theola Busch



Dr. Anne Bruzzi

Deputy Public Analyst

Anne retired from this laboratory on 30/11/2009. Anne's career started in the laboratory in 1976 when she was employed as a temporary analytical chemist.

Her first role involved the analysis of metals on samples of vegetation taken in proximity to the Tara Mines. Anne also spent some time in the water laboratory before taking over the Drugs and Toxicology lab in 1980. At this time she had secured a permanent position as an Executive Chemist. During her years in the Drugs and Toxicology laboratory, she developed the service provided and succeeded in achieving the status of Official Medicines Control Laboratory for the Pharmaceutical section.

Anne's next role was that of Quality Manager, a position she took up in the year 2000. Her position on retirement was that of Deputy Public Analyst having also served as Public Analyst in an acting capacity.

Throughout her career at the laboratory, Anne always strove for excellence, only accepting the highest standards. This passion for excellence combined with the ability to navigate quickly through difficult issues became hallmarks of Anne's work. For these and other qualities, Anne was well respected by colleagues both within and outside the laboratory.

The laboratory continues to benefit from the many practices and systems Anne developed, particularly the quality system which she completely re-designed.

Anne has always been a great source of support, sound advice, and wisdom, something for which we are very grateful.

We hope Anne enjoys the extra time she now has, and we wish her a very happy and healthy retirement in the company of her friends, family, children and grandchildren.

