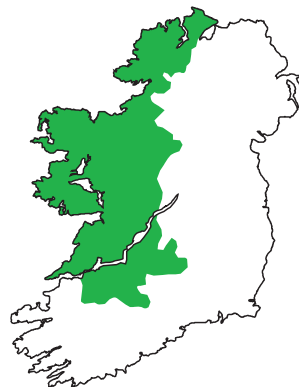




Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

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

Annual Report 2010
Tuarascáil Bhliantúil 2010



FOR YEAR ENDED 31ST DECEMBER, 2010

ACKNOWLEDGEMENTS

I am pleased to present this report which outlines the work undertaken in this laboratory during 2010.

I would like to thank all the staff for the very high standard of work, dedication, and forbearance in the face of the staff reductions and budget constraints which we experienced this year.



Rory Mannion
Public Analyst

July 2011

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

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I. INTRODUCTION

I.1 Role of the Laboratory

This laboratory, along with its sister laboratories in Dublin and Cork form the Irish Public Analyst's Laboratory Service. Their primary role is one of public health protection by providing an independent objective analytical and advisory service to the general public and various government agencies. This laboratory provides a service in the following areas.

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

I.2 Customer Base

Food Analysis

- Environmental Health Officers
- Food Safety Authority of Ireland (FSAI)
- Safefood (FSPB)
- Sea Fisheries Protection Authority
- Government Departments
- Industry
- General Public

Water Analysis

- Environmental Health Officers
- Local Authorities
- Hospitals
- Industry
- General Public

Air Monitoring

- Galway City Council

Pharmaceuticals

- Irish Medicines Board (IMB)
- Pharmaceutical Society of Ireland
- Department of Health

Toxicology

- Consultant Pathologists
- Veterinary Surgeons
- General Public

Cosmetics

- Environmental Health Officers
- Department of Health
- Irish Medicines Board
- General Public



I.3 National Development

The Public Analyst's Laboratories are termed regional laboratories as historically, they provided a service to their geographical region, particularly in the areas of food and water analysis.

This model was continued in the 1990s when the Department of Health and Children oversaw the formation of Regional Food Committees to co-ordinate food surveillance. A more national approach to food surveillance was developed with the formation of the Food Safety Authority of Ireland (FSAI).

The Public Analyst's Laboratories (P.A.L.s) have developed very much independently of each other over a long period of time in response to the regional demands of its service users. The need for a more co-ordinated service in the Food Testing Area was stated in the report of the Strategic Review of the Food Safety Laboratory Service in 2004. The report also recommended the appointment of a Scientific Officer to co-ordinate the activities of the service.

Regrettably, there has been no official implementation of the recommendations of the report. This year 2010, the three laboratories have agreed to advance further the level of co-ordination between the laboratories in the area of Food surveillance, resulting in each laboratory developing agreed areas of specialisation (See section 2.3.2).

The key benefits of this model are the elimination of duplication, resulting in increased efficiency and cost effectiveness, and the development of a greater level of expertise, whereby each laboratory devotes more time and resources to more focused areas of work.

Given the current and prospective economic conditions, the level of resources available to public services in general will continue to decrease. It is vital therefore, that in order to maximise the level and quality of our service, increasingly scarce resources are employed in the most cost effective manner.

The specialisation of food analysis within the PAL service will continue with each laboratory advancing their expertise in separate areas resulting in a more efficient and effective national service.

1.4 Administration

The laboratory is administered by the Primary Continuing and Community Care Directorate (PCCC), within the HSE.

1.5 Finance

The budget allocation for the laboratory for 2010 was €2.868 million. The income received during the year was €215,697. The laboratory operated within budget.

1.6 Workload

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

Foods	2,727
Waters	8,613
Pharmaceuticals	96
Toxicology	198
Cosmetics	448
Air-Monitoring	1,092
Miscellaneous	34
Total	13,208

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 I, which outlines all of the food sample sources. Testing is performed for contaminants, allergens, nutrients, additives, composition and labelling etc. The service provided includes programmed surveillance and also ad-hoc testing (food complaints and alerts, 'inspection' samples etc.) as required.

Some private food complaints and food export certification samples are tested for industry and the public. Applied research projects have also been carried out in conjunction with safefood, www.safefood.eu.

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

**see Reports 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

The principal legislative responsibility for ensuring food safety lies with the food industry (manufacturers, importers, wholesalers, caterers and retailers).

The 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 etc., in particular monitoring food hygiene;

- **Monitoring the safety and quality of food through laboratory analysis.** Foods are monitored for compliance with specific legislative standards of safety (microbiological, chemical and physical), and also with general safety and quality/compositional criteria.

2.3 Food Safety Laboratory Service – Developments & Reviews etc.

2.3.1 General

A Food Safety Laboratory Service (FSLs) is provided by the HSE's seven Official Food Microbiology and three 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 officially implemented.

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

Separately, a Review of Food Sampling in the HSE was progressed in 2009/2010, as had been agreed in the Service Contract between the FSAI and the HSE. Both the HSE and the FSAI participated in the review. One of the key developments from this review is the enhanced national and regional co-ordination of food sampling, with a move to increased sampling from earlier stages (wholesale, import, manufacturing etc.) in the food chain.

2.3.2 Specialisation of Testing in Public Analysts' Laboratories

The formation by the Department of Health of the regional food committees in the 1990s established the official control of foodstuffs, including food surveillance, on a regional basis. Following expansion of the service, and enhanced interaction between the PA Labs and FSAI from ca. 2000 forward, newly introduced testing was allocated, on a test-by-test basis, as specialisations to a single laboratory. Following a recommendation in the 2004 Strategic Developmental Review of Health Board Food Control Laboratories (see 2.3.1 above) to further develop specialised testing capacities in FSLs, the specialisation process continued. The extension of EU National Reference Laboratories (to include Salmonella, Mycotoxins, PAHs, Heavy Metals etc) provided further impetus for specialisation. The Dublin PAL became the National Reference Laboratory (NRL) for PAHs, Mycotoxins and Food Contact Materials, whilst PAL Cork is NRL for Heavy Metals. In 2009/10, with encouragement from FSAI, a decision was made to reorganise on a national basis, all of the remaining food testing in the PAL service. Following a series of meetings with staff, and between the Public Analysts, in 2010, a detailed Specialisation Document was agreed. The document includes all food testing performed by PALs, designated as Specialised or Core (tests performed in all three labs). Some of the principal specialisations agreed to date include:

PAL Dublin: Food Processing Contaminants; Food Contact Materials; Mycotoxins.....

PAL Cork: Heavy Metals; Meat Speciation / Adulteration; GMOs; Pesticides....

PAL Galway: Food Allergens; Other Natural Toxins; Salt Surveys; Folic Acid.....

The specialisation process is to be advanced further in 2011.

2.4 Food Testing (Chemical) Results for 2010

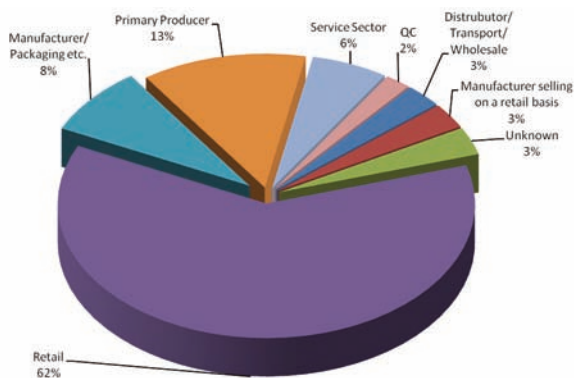
2.4.1 Regional Chemical Surveillance Programme 2010

Nationally co-ordinated, Regional Food Surveillance (Chemical) Programmes are produced between the HSE and the FSAI, drawing largely on risk-based priorities identified by the FSAI and on regional sampling needs within the HSE. The production of Ireland's Multi-Annual National Control Plan (MANCP) is co-ordinated by FSAI and it includes the Food Surveillance Programmes.

HSE West's Chemical Testing Programme for 2010 is outlined in Appendix 1.

2.4.2 Results for 2010

All of the programmed surveys for 2010 were carried out. A total of 2,727 samples were received. The Figure below indicates the 'stage' at which Western Region EHO samples (excluding complaints) were taken in 2010. There has been a decrease in retail level sampling.



2.4.3 Statistics for 2010

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 2010 was 2,727, i.e. 2.70 per 1,000 population. The samples consisted of 105 complaints [see section 2.7] and 2,622 others. Of the 2,622 above, "Non-complying" reports (i.e. test results indicating non-compliances with standards in Irish Food Law) were issued on 217 (8.3 %); this figure of 8.3 % is comparable to the figures for previous years:

"Non-complying" Reports (as % of samples tested, excluding complaints).

Year	%
2010	8.3
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 non-compliances, 179 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 summarise the work for 2010 according to the sampling region and source.



Table 1: Food Sample Sources (2010)

Submitted by / Sample Type	No. of Samples	No. on which Adverse Reports were issued
Environmental Health Officers (HSE West)		
Informal Routine (Sampling Programme)	1,492	167
Public (Food Complaints via EHOs)	94	55
Inspection samples (non-programmed)	45	14
Follow-up samples (non-programmed)	68	9
General Public		
Complaints	11	9
Others	121	5
Food Safety Authority of Ireland	422	18
Food Alert	3	0
Sea Fisheries Protection Agency & BIP	42	1
DAFF & Local Authority Veterinary Service	64	3
Laboratory QA & Method Development etc.	128	0
Export Certification	237	0
OVERALL TOTAL	2,727	281

Table 2: HSE West Food Sample Sources (2010)

Community Care County Area E.H.O. Service	Number of Samples Submitted (excluding complaints)	Number per 1,000 population*
Galway	335	1.45
Mayo	200	1.62
Roscommon	136	2.32
Clare	182	1.64
Limerick	285	2.11
North Tipperary/East Limerick	206	1.80
Donegal	226	1.54
Sligo/Leitrim/West Cavan	191	2.10

* Based on 2006 census

2.4.4 Overall Summary of Results and Food Quality 2010

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 2010. Results are reported by test parameter in sections 2.5 and 2.6. 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 low level of contaminated samples was found in 2010. Also, the number of submitted food complaint samples remains decreased, compared to previous years (see 2.7). The number of Hazard/Contamination Reports (see 2.8) issued was 11.

The overall results reported here for 2010 indicate a high level of compliance 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 and legislative compliance; they include Natural Toxins, Industrial/Environmental contaminants, Food Processing/Packaging contaminants, Allergens, Plant- and Animal-treatment Residues and Foreign Bodies etc.

Surveillance of contaminants and residues in Ireland is nationally co-ordinated. 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://Infrd.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 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 2010 is summarised in Table 3.

Table 3: Food Contaminants – EC Regulation 1881/2006 (as amended) - Principal Testing in 2010

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)	Rice & Rice Flour	17	17	0
		Maize & Maize Products	13	13	0
		Nut Products	10	10	0
		Nuts	7	7	0
		Others	2	2	0
Sub-total Aflatoxins			49	49	0
Fumonisin ² (B ₁ , B ₂)	1,000µg/kg	Maize & Maize Products	7	7	0
	-	Corn Products, Flours etc.	7	7	0
	-	Rice & Rice Flour	7	7	0
Sub-total Fumonisin			21	21	0
Lead ³ (Pb)	0.8mg/dm ² or 4.0mg/L	Ceramic Tableware	46	46	0
	0.3 to 1.5mg/kg	Fish & Fishery Products	59	59	0
	0.05mg/kg	Beverage Bases	62	62	0
	0.020mg/kg	Infant Formulae/Follow-on Formulae	26	26	0
	10.0µg/L	Water (Bottled)	15	15	0
	0.20mg/kg	Rice	38	38	0
	0.1 to 0.3mg/kg	Fruit / Vegetables / Potatoes	65	65	0
	0.20 mg/kg (cereals)	Flour, Cereals, etc.	5	5	0
	-	Herbal Teas / Tea	6	6	0
	-	Vitamins & Food Supplements	22	22	0
	-	Egg & Egg Products	5	5	0
	-	Dairy Products	6	6	0
-	Soup Mix	5	5	0	
-	Miscellaneous	30	30	0	
Sub-total Lead (Pb)			390	390	0
Cadmium ³ (Cd)	0.07mg/dm ² or 0.3mg/L	Ceramic Tableware	46	46	0
	0.05 to 1.0mg/kg	Fish & Fishery Products	60	57	3
	-	Beverage Bases	62	62	0
	-	Infant Formulae/Follow-on Formula	26	26	0
	5.0µg/L	Water (Bottled)	15	15	0
	0.20mg/kg	Rice	38	38	0
	0.05 to 0.2mg/kg	Fruit / Vegetables / Potatoes	66	65	1
	-	Herbal Teas / Teas	6	6	0
	0.1 to 0.2mg/kg	Flour, Cereals, etc.	5	5	0
	1.0 to 3.0mg/kg	Vitamins & Food Supplements	22	22	0
	-	Egg & Egg Products	5	5	0
	-	Dairy Products	6	6	0
-	Soup Mix	5	5	0	
-	Miscellaneous	19	19	0	
Sub-total Cadmium (Cd)			381	377	4
Mercury ³ (Hg)	0.50 to 1.0mg/kg	Fish & Fishery Products	87	85	2
	-	Beverage Base	62	62	0
	-	Infant/Follow-on Formulae	43	43	0
	-	Infant/Baby Food	38	38	0
	-	Edible Seaweed Products	3	3	0
	-	Sub-total Mercury (Hg)	233	231	2
Benzo-[a]-pyrene ⁴	2.0µg/kg (Oil)	Food & Oil Supplements etc.	32	32	0
	2.0µg/kg (Oil & Fish) 5.0µg/kg (Smoked Fish)	Canned Fish in Oil	23	23	0
	-	Others	2	2	0
Sub-total Benzo-[a]-pyrene			57	57	0
3-MCPD ⁵	0.02mg/kg (Soy Sauce & H.V.P.)	Soy Sauces	18	18	0

Please see notes on next page

- ¹ Aflatoxins are fungal toxins which may contaminate certain foods (nuts, dried fruit etc.), particularly from the tropics/sub-tropics.
² Fumonisin are fungal toxins which occasionally contaminate foods such as corn and corn 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_3-2_11_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
⁵ 3-MCPD, 3-monochloropropanediol contamination may occur where foodstuffs undergo acid hydrolysis e.g. acid hydrolysis of soy sauces.

Aflatoxins in imported foods constitute one of the most common sources of EU Rapid Alert Notifications. 49 samples were tested here in 2010, none of the samples tested were found to have excessive levels of aflatoxins.

Lead/Cadmium is performed partly to generate data for dietary intake. 15 bottled water samples were screened (by ICP-MS) for metallic contaminants (Audit water testing), and none were found to be excessive for metals.

Testing for **Lead and Cadmium** was carried out in 2010 on a wide variety of foods (see Table 3); just four samples, three private samples of crab and one sample of parsnips, were found to be excessive for Cadmium (Cd). The relatively high level of testing of foods for

2.5.3 Other Food Contaminants etc.

Table 4 below summarises 2010 testing results for contaminants etc other than those covered in EC Regulation No. 1881/2006.

Table 4: Other Food Contaminants/Residues: Summary of Results for 2010

Contaminant	Limit(s) (Legal Source)	Sample Types	Total	Complying	Non-complying
Marine Biotoxins ¹	EU Decisions 2002/225/EC & 2002/226/EC				
DSP Toxins ²	160 µg/kg	Mussels, Oysters, Clams	14	14	0
AZA Toxins ³	160 µg/kg	Mussels, Oysters, Clams	14	14	0
ASP Toxins ⁴	20 mg/kg	As above	30	30	0
Gluten (EHO sampling) ⁶	200 ppm*	Rendered ⁵ Gluten-free foods	13	13	0
	20 ppm*	Naturally Gluten-free foods	222	218	4
Gluten (private samples)	200 ppm*	Rendered ⁵ Gluten-free foods	3	3	0
	20 ppm*	Naturally Gluten-free foods	79	79	0
Gluten (FSAI Weaning Foods Survey)	No limit applied	Wheat based foods commonly used for weaning of infants	16	N/A	N/A
Peanut	Directive 2003/89/EC	Confectionery	169	169	0
Histamine/Biogenic Amines ⁷	200mg/kg (EC Reg 1441/2007)	Scombroid Fish etc. (Tuna, Mackerel...)	289	284	5
Arsenic (As)	0.5 mg/kg (SI 44 of 1972)	Fish & Fishery Products	1	1	0
		Miscellaneous	4	4	0
		Rice/Maize/Cereals	42	42	0
		Edible Seaweed Products	5	5	0
		Water (Bottled)	15	15	0
Anti-bacterial Substances (ABS) ⁸ (EC Four-Plate test)	2 mm 'Zone' of Inhibition	Chicken	16	16	0
		Pork	16	16	0

Please see notes on next page

¹ These toxins may accumulate in shellfish grown in seawater with toxic marine algae. Retail/Catering level (largely) sampling by EHO service (three samples out-contracted to Marine Institute). Principal official monitoring is at production level by Dept. of CENR/Marine Institute

² Diarrhetic Shellfish Poisoning (DSP)

³ Azaspiracid (AZA).

⁴ Amnesic Shellfish Poisoning (ASP).

⁵ Refers in the main to Gluten-free foods based on wheat starch.

⁶ Includes Routine, Inspection and Complaint samples.

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. The limit of 200mg Histamine/kg applies to each individual sample. In a batch of nine samples, no more than two samples are permitted to have a histamine level > 100mg/kg.

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

Allergens (Gluten and Peanut Protein)

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.

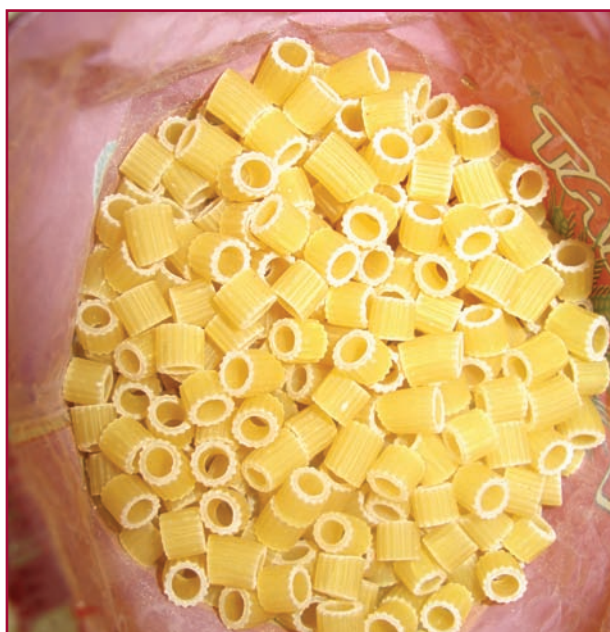
In 2010 a diverse range of gluten-free foods from pharmacies, health food shops, supermarkets and local manufacturers was received. Just 4 of the official HSE programmed samples ("naturally gluten-free" produce) were non-compliant with the legislative limits. The above results indicate an overall high quality (with respect to gluten levels) of gluten-free foods available to the consumer.

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>

In 2010 we also analysed 16 samples of foods used as weaning foods, on behalf of the FSAI – these were not 'gluten-free' foods; on the contrary, many were wheat-containing foods (breads, cereals, flour, pasta). The objective of this project was to calculate the amount of gluten to which infants being weaned would be exposed by analysing the gluten content of foods commonly used in the weaning of infants.

An ELISA based analysis for **Peanut** in foods was introduced in this laboratory in 2010; this technique is

based on the use of polyclonal antibodies to the allergenic peanut proteins Ara h1 and Ara h2. In 2010 we analysed 169 samples of foods (mainly chocolate and other types of confectionery) for the presence of peanut, with an emphasis on products labelled as nut- or peanut-free. This work was part of the 2010 FSAI co-ordinated, cross-agency labelling programme. This analysis indicated no non-compliances, the only samples found to contain peanut were labelled with "may-contain peanut" type labels. The majority of samples labelled in this manner were found not to contain any peanut residues – this may indicate an over-reliance on this type of labelling in the food industries involved. The FSAI are preparing a report on this project that will be published in 2011.



289 fish samples were tested here in 2010 for **Histamine** and 3 other biogenic amines, viz. Putrescine, Cadaverine and Tyramine. These included 207 (~ 23 x 9 subsamples) samples submitted by the Sea-Fisheries Protection Authority (SFPA), 18 (2 x 9 subsamples) Border Inspection Post (BIP) samples from The Department of Agriculture, Fisheries and Food (DAFF) and 64 samples from Environmental Health Officers.

5 of the 289 samples had excessive Histamine (127 - 2133mg/kg), including 1 EHO sample (a tuna fillet) and 4 BIP samples (from one set of 9). A RASSF (Rapid Alert System for Food and Feed) notification was issued for the BIP samples taken at Dublin Port, (canned tuna chunks from Thailand).

5 Samples contained elevated (>100 mg/kg) Cadaverine and 3 had elevated (>100 mg/kg) Tyramine; 2 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>.

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.



Nutritional Information			
	Typical Composition when Cooked	Per 100g	Per ¼ Pizza Serving
Energy		1202kJ	1653kJ
Protein		286kcal	393kcal
Carbohydrate		12.4g	17.1g
of which Sugars		29.2g	40.2g
Total Fat		4.1g	5.6g
of which Saturates		12.7g	17.5g
Fibre		4.6g	6.3g
Sodium		1.8g	2.5g
Salt Equivalent		0.40g	0.55g
		1.0g	1.4g

2.6.1 Sodium/Salt in Food.

There is considerable international effort being made to reduce population dietary intakes of 'Salt'/Sodium. The Food Safety Authority of Ireland (FSAI) took up the issue early in Ireland (in 2002), see published 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, would 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. FSAI is implementing a programme, in conjunction with the food industry, to reduce salt levels in the major, salt-containing, processed foods - refer to http://www.fsai.ie/science_and_health/salt_and_health.html for a progress update. The stated aim was 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 2010 results for the FSAI surveys and other programmed surveillance (EHO sampling) are summarized in Table 5.

Table 5: Summary of 'Salt' (Sodium & Potassium) Testing Results 2010

Parameter(s)	Food Types etc.		Samples Tested	Average Results (g/100g)	Range of Results (g/100g)
'Salt' (Sodium & Potassium)	Bread FSAI survey	Sodium	132	0.48	0.25 – 0.88
		Potassium	132	0.19	0.10 – 0.74
	Soups, Broths and Sauces FSAI survey	Sodium	114	1.25	0.09 – 6.40
		Potassium	114	0.34	0.04 – 1.38
	Raw Chicken FSAI samples	Sodium	3	0.05	0.05 – 0.05
		Potassium	3	0.38	0.36 – 0.40
	Soups, Broths and Sauces HSE regional samples	Sodium	17	3.8	0.07 – 11.77
		Potassium	17	0.24	0.05 – 0.73
	Babyfood / Weaning Foods HSE regional survey	Sodium	31	0.07	<0.01 – 0.18
		Potassium	31	0.21	0.05 – 0.69
	Prepared Meals HSE regional survey	Sodium	54	0.25	0.02 – 0.55
		Potassium	54	0.23	0.08 – 0.41
	Meat and Meat products HSE regional samples	Sodium	17	1.5	0.24 – 6.00
		Potassium	16	0.29	0.08 – 0.43
	Miscellaneous Processed foods ¹ HSE regional samples	Sodium	11	0.94	<0.01 – 5.59
		Potassium	11	0.35	0.02 – 0.22
	Cereals and Bakery Products HSE regional samples	Sodium	71	0.30	0.01 – 1.68
		Potassium	71	0.25	0.04 – 0.61
	Cereal-based Infant Food HSE regional samples	Sodium	12	0.05	0.01 – 0.17
		Potassium	12	0.30	0.07 – 0.71
	Confectionery HSE regional samples	Sodium	24	0.15	0.01 – 0.42
		Potassium	23	0.30	0.05 – 0.57
	Snack Foods HSE regional samples	Sodium	7	0.38	0.02 – 0.60
		Potassium	6	0.36	0.16 – 0.70
	Follow-on Milk HSE regional samples	Sodium	5	0.16	0.14 – 0.20
		Potassium	5	0.57	0.38 – 0.74
	Bread Private	Sodium	4	0.43	0.41 – 0.44
		Potassium	4	0.17	0.12 – 0.22
Bottled Water HSE regional samples	Sodium	13	185 (mg/L)	13 – 1720 (mg/L)	

¹ Including canned and pickled vegetables, foodstuff intended for special nutritional uses, seeds, tea, butter, cheese and yoghurt.

Prepared Meals: the average sodium value of 0.25g/100g for the Prepared Meals (Cooked/Prepared on premises) corresponds to 0.63 g 'salt' (sodium chloride) per 100g, and to 2.52 g of salt per 'meal' (for meal weight of 400g). This means that the prepared meal contains ca. 63% of the ultimate targeted daily intake of salt (4 grams).

Note: Teagasc Food Research, Ashtown is performing research into reducing salt in ready meals (see article in TRResearch Volume 5, Number 2, Summer 2010).

The 2010 surveillance above for FSAI is a continuation of the work dating from 2003. To date the main food categories contributing to dietary sodium intake have been surveyed, including follow-up surveys to monitor the extent of reductions being achieved. The Table following summarises the main surveys for FSAI.

Year	Food Categories	No. of Samples	Sodium Results Average (g/100g)	Sodium Results Range (g/100g)
2003	Breads	100	0.60	0.17 – 1.13
	Breakfast Cereals	83	0.33	0.002 – 0.91
2004	Ready Meals	51	0.29	0.08 – 0.64
	Sauces etc	52	0.65	0.19 – 4.32
	Processed/Cured Meats	266	1.01	0.07 – 2.50
	Crisps/Snacks	45	0.76	0.23 – 2.38
2005	Babyfoods/Infant Formula	136	0.01	<0.005 – 0.37
	Snack Foods/Fried Foods	87	0.57	0.006 – 1.67
	Ready-made Foods	73	0.49	0.06 – 1.58
	Breads	113	0.51	0.23 – 0.99
	Soups	126	2.17	0.19 – 8.61
2006	Breads	71	0.54	0.28 – 0.92
	Meat Products	223	0.90	0.20 – 1.89
	Crisps etc	98	0.80	0.29 – 2.12
2007	Breakfast Cereals	119	0.28	<0.01 – 0.8
	Spreads/Butters	75	0.54	<0.01 – 1.15
2008	Processed Meats	26	0.85	0.44 – 1.13
	Breads	6	0.41	0.40 – 0.43
	Breakfast Cereals	24	0.13	<0.01 – 0.30
	Spreads/Butters	12	0.33	<0.01 – 0.53
	Crisps, Popcorn & Snacks	124	0.60	<0.01 – 1.93
2009	Processed Meats/Meat Products	127	0.81	0.04 – 2.36
	Sauces etc	71	0.40	0.06 – 1.44
	Prepared Meals	58	0.23	0.07 – 0.41
	Cheeses	70	0.80	0.19 – 1.61

2.6.2 Other Nutritional Testing

Table 6 summarises other nutritional testing carried out here in 2010.

Table 6: Other Nutritional/Compositional Testing 2010

Parameter	Food Types etc.	Samples Tested	Range of Results (µg/100g)
Folic Acid	Infant Formulae	25	55 - 180
	Infant Foods (Dry)	11	100 - 136
	Folic Acid Supplements, Multi-Vitamins, etc.	60	(% of Labelled Value) 51 - 266

Parameters	Food Types etc.	Samples Tested	Range of Results (g/100g)
Fat	Follow-on Formulae	5	20.8 – 28.3
	Weaning Foods	46	< 0.2 – 17.0
	Ready/Prepared Meals	25	0.4 – 15.4
	Confectionery Bars	19	10.2 – 42.9
	Others (Dairy, QA/PTS etc.)	20	-
Protein	Follow-on Formulae	5	9.0 – 11.4
	Weaning Foods	48	0.3 – 15.7
	Slimming Foods	19	3.5 – 46.9
	Miscellaneous (Meat & Cereal Products..)	11	4.7 – 11.6
	Others (Complaints, QA/PTS etc.)	16	-

Folic Acid testing was introduced in this laboratory in 2006, as an analytical resource for FSAI in support of the potential mandatory fortification of breads with folic acid. 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 2010, surveys of infant formulae, infant foods (dried) and folic acid supplements/multivitamins (for Folic Acid content) were performed (see Table 6). Results were generally within the expected range, although several samples of folic acid supplements were found to contain

significantly more folic acid than the labelled values. The results highlighted the lack of national or EU agreed tolerances for the nutritional labelling of foods.

Follow-up actions were taken by FSAI and the Environmental Health Officers. A more detailed report is to be issued by FSAI in 2011.

2.6.3 Additives/Labelling/ Compositional Quality Results 2010

Table 7 summarises various testing for additives/labelling/composition etc. in 2010.

Table 7: Summary of Additives/Labelling/Compositional Quality Results 2010

Parameter(s)	Food Types etc.	Number of Samples Tested & Results		
		Total	Complying with Standard	Non-Complying with Standard
Benzoates & Sorbates ¹	Soft drinks (19), Sauces (14) & Prepared Salad (1)	34	34	0
Sulphur Dioxide ¹ (Sulphites)	Meats/fish (118), Wines/Beers /Alcoholic Beverages (17), Prawns/Crabs/Shrimp (20), Dried Fruit/Veg (27), Peeled Potatoes (8), Soft Drinks (23)	213	204	9
Nitrites & Nitrates ¹	Cured Meats (25) Brines (2) & Meat Products (5)	32	28	4
Food Irradiation ² Photo-stimulated luminescence screening	Herbs/Spices (16), Herbal Teas/Teas (7), Vitamins & Food Supplements (29), Seeds (2), & Others (2)	56	56	0
Dairy Testing ³	Dairy Products (Milk, Cream etc.)	38	36	2
General Labelling	Miscellaneous Packaged Foods	533	354	179
Alcoholic Strength	Pub-level Spirits	13	13	0
Others: pH Ref. Index/Sol. Solids	Miscellaneous Food Types Jams, Chutney etc.	363 11	363 11	0 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 S.I. 297 of 2000 authorises irradiation of herbs, spices and vegetable seasonings. Irradiated foods must be labelled as such

³ 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 the FSAI and the 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 to monitor for legislative compliance and also to collect data for the EU on levels and intakes. The results from this laboratory (see Table 7) for 2010 indicate a high level of compliance with the standards. 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 2011. This process will result in a full re-draft of the EU general and nutritional labelling requirements and the introduction of certain new labelling requirements to cover, for example, compulsory nutritional labelling as well as an extension of country of origin labelling to meat other than bovine meat.

In 2010, 514 samples were examined here for compliance with labelling legislation and 179 were designated as being non-complying with the standards in 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 (EC) 1924/2006.



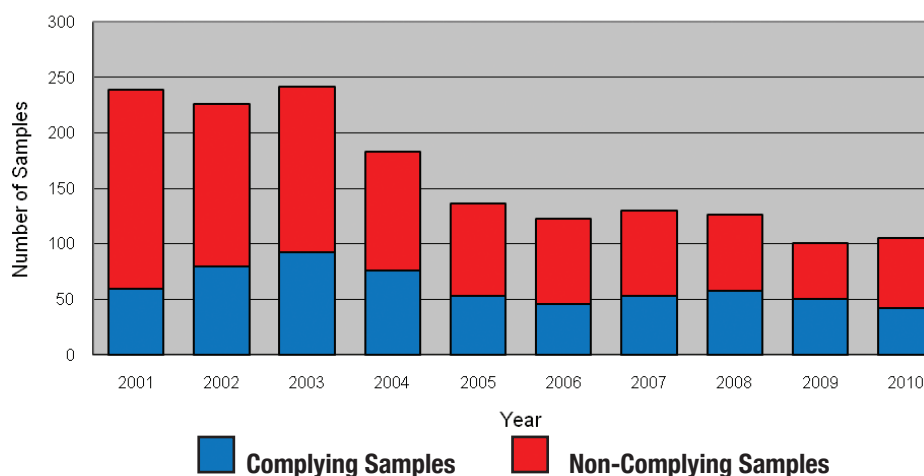
2.7 Complaint Samples.

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.

A total of 105 complaint samples, received from the EHO service (94) and directly from the public (11), were investigated here in 2010. Of the 105, the number of adverse reports issued was 65 (62%), 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 129 (2004 – 2010). 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.

Complaint Samples Testing



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. A short summary of the EU RASFF Notifications Report 2009

http://ec.europa.eu/food/food/rapidalert/docs/report2009_en.pdf is given by Hazard group below:

Hazard / Risk Group	Number of Notifications 2009
Food: Chemical and Physical Hazards ¹	2,227
Food: Microbiological Hazards ²	557
Food: Other Hazard / Risks ³	480
Animal Feedstuffs Hazards ⁴	10

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

Food Hazard/Contamination Reports are issued by the laboratory to the EHO service and the FSAI when significant contamination is detected. Upon consideration by the FSAI, a Food Alert notification may be issued (to the EU) depending on the evaluation of the risk. In 2010, 11 Food Hazard/Contamination Reports were issued by the laboratory, relating to: Sulphur Dioxide in sausages (4), apricots (1) & peeled potatoes (1); Mercury in swordfish (1); Undeclared Egg in yogurt raisins (1); Undeclared Peanut in fruit & nut bar (1); Histamine in canned tuna (1); Folic Acid in food supplements (1). 4 RASFF 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 from this laboratory is outlined below:

2010	11	2005	23
2009	14	2004	16
2008	7	2003	16
2007	24	2002	19
2006	26	2001	43

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 8,613 water samples in 2010. These consisted of drinking waters, bathing waters, pool waters, effluents and haemodialysis samples. Most of the samples analysed are drinking waters, which are tested for compliance with the European Communities (Drinking Water) Regulations 2007, S.I. 278 of 2007.



3.2 Sample Sources 2010

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

Table 8: Source of samples received in 2010

Source	Number
Galway (HSE)	1,663
Galway County Council	103
Galway City Council	585
Mayo	1,349
Roscommon	222
Donegal	1,497
Sligo / Leitrim	395
North Tipperary	624
Clare	333
Limerick	554
Haemodialysis (Hospitals)	385
Miscellaneous (including Private)	903
TOTAL	8,613

3.3 Water Quality

The testing by this laboratory indicates in general a high level of compliance for those parameters tested. In 2010, private drinking water samples accounted for over half of all the exceedances recorded. A full appreciation of the overall quality can only be obtained by also considering the bacteriological quality along with additional chemical parameters as published by the EPA.

Based on scientific studies, the International agency for research on cancer (IARC) has classified water contaminants into 5 groups based on their carcinogenicity, as shown in Table 9.

Table 9: Classification of water contaminants from the IARC

Group	Classification
1	Carcinogenic to humans
2A	Probably carcinogenic to humans
2B	Possibly carcinogenic to humans
3	Not classifiable as to its carcinogenicity to humans
4	Probably not carcinogenic to humans

3.4 Fluoridation of Public Water Supplies

Fluoride accounts for about 0.3% of the earth's crust. It's wide range of uses include fluoridation of water supplies, most general anaesthetics, anti-reflective coatings, antibiotics, refrigeration and air-conditioning systems.

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.

3.5 Drinking Water Chemical Parameters

Up to 35 different chemical parameters may be analysed in these samples. Summaries of the results for selected parameters are detailed below, see Tables 10 & 11.

3.5.1 Volatile Organic Compounds (VOCs)

VOCs are a class of compounds which, in the context of drinking waters include Trihalomethanes (THMs), Benzene, 1,2 Dichloroethane, Trichloroethene and Tetrachloroethene.

THMs 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. The rate and degree of formation depends on the chlorine and humic acid concentration, temperature, pH and bromide ion concentration.

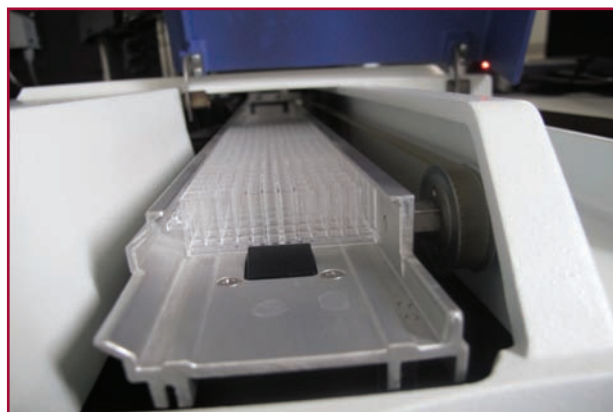
Chloroform (the predominant THM) and Bromodichloromethane are classified as group 2B agents by the IARC. The EU has set a health-based parametric value of 100 µg/L for THMs (S.I. 278 of 2007).

A summary of results for 2010 is shown in Table 10. The high results can be attributed to a limited number of water supplies that were analysed repeatedly.

Table 10: Trihalomethane Results 2010

Trihalomethane (µg/L).							
Concentration Range	≤ 10	11-50	51-100	101-150	151-200	201-300	> 300
No. of Samples	130	160	176	101	80	28	6

The other VOCs analysed in the laboratory include Trichloroethene and Tetrachloroethene (used for metal degreasing and in the dry cleaning industry), 1,2 Dichloroethane (used in the production of vinyl chloride) and Benzene (principally used in the production of other organic chemicals). The results for these parameters can be viewed in Table 11.



3.5.2 Aluminium

Aluminium is the most abundant metallic element and constitutes about 8% of the earth's crust. Aluminium salts are widely used in water treatment plants as coagulants to reduce organic matter, colour, turbidity, and microorganism levels. The Aluminium is subsequently removed, but traces may persist in the treated water. The parametric value of 200 mg/L in treated water is not a health based value, but prevents the deterioration of water quality (turbidity and colour) in the distribution network due to the deposition of aluminium hydroxides.

3.5.3 Ammonium

Ammonia in the environment originates from metabolic, agricultural and industrial processes and from disinfection with chloramines. Natural levels in both groundwater and surface water are generally below 0.1 mg/L. The EU has set a parametric value of 0.3 mg/L in drinking water (S.I. 278 of 2007). Ammonia levels greater than the parametric value may indicate pollution. Almost 90% of the exceedances in 2010 (Table 11) were from private samples.

3.5.4 Arsenic

Arsenic and inorganic arsenic compounds are principally used as alloying agents in the manufacture of transistors, lasers and semi-conductors. Arsenic is introduced into drinking water sources primarily through the dissolution of naturally occurring minerals and ores. The results for the year 2010 are summarised in Table 11. It should be pointed out that 98% of the exceedances were from private samples.

3.5.5 Boron

Boron compounds are used in the manufacture of glass, soaps and detergents and flame retardants. Boron is found naturally in groundwater, but its presence in surface water is frequently a consequence of the discharge of treated sewage effluent, arising from its use in some detergents.

At a meeting in 2009, the Drinking Water Quality Committee of the WHO (World Health Organisation) recommended revising the Boron Guideline Value from the current 1.0 mg/L to 2.4 mg/L. The revised Guideline Value and Summary Statement will be incorporated into the Guidelines for Drinking water Quality, 4th Edition, which will be published in 2011.

3.5.6 Cadmium and cadmium compounds

Cadmium metal is used in the steel industry and in plastics. Cadmium compounds are widely used in batteries. Cadmium is released to the environment in wastewater, and diffuse pollution is caused by contamination from fertilizers and local air pollution. Contamination in drinking water may also be caused by impurities in the zinc of galvanized pipes and solders and some metal fittings.

3.5.7 Chromium

Chromium is widely distributed in the earth's crust. It has found a wide range of applications, mainly due to its hardness and resistance to corrosion. It is also known for its remarkable magnetic property. It is mainly used in the manufacture of stainless steel, as it prevents corrosion and discoloration of steel. Chromium (III) or trivalent chromium is required in the human body, but in very small amounts. It is mainly required for carrying out lipid and sugar metabolism.

3.5.8 Colour

Colour in drinking water is usually due to the presence of coloured organic matter associated with the humus fraction of soil. It is also strongly influenced by the presence of iron and other metals. There is no health-based guideline value for colour, although a level of 20 mg/L Pt-Co, is generally used.

3.5.9 Copper

Copper is an essential human nutrient. It is also used to make pipes, valves and fittings and is present in alloys and coatings. Copper concentrations in drinking water vary widely, with the primary source most often being the corrosion of interior copper plumbing.

This corrosion is greater when the water is acidic or very soft. Copper can stain laundry and sanitary ware at concentrations above 1 mg/L.

3.5.10 Iron

Iron is the second most abundant metal in the earth's crust, and is an essential element in human nutrition. Elemental iron is rarely found in nature, as the iron ions Fe²⁺ and Fe³⁺ readily combine with oxygen- and sulfur-containing compounds to form oxides, hydroxides, carbonates, and sulfides. In drinking water supplies, iron(II) salts are unstable and are precipitated as insoluble iron(III) hydroxide, which settles out as a rust-coloured silt. Anaerobic groundwaters may contain iron(II) at concentrations of up to several milligrams per litre without discoloration or turbidity in the water when directly pumped from a well. Staining of laundry and plumbing fixtures may occur at concentrations above 0.3 mg/L.

3.5.11 Lead

Lead is used primarily in the production of lead-acid batteries, solders and alloys. Lead can affect the developing nervous systems and intellectual and behavioural developments. Consequently, fetuses and children under six years of age are most at risk.

Owing to the decreasing use of lead-containing additives in petrol worldwide and of lead-containing solder in the food processing industry, concentrations of lead in the air and food are declining, and intake from drinking water constitutes a greater proportion of total intake. Lead is rarely present in water as a result of dissolution from natural sources. Its presence is primarily due to household plumbing systems containing lead in pipes, solder, fittings or the service connection to homes. The amount of lead dissolved from the plumbing system depends on several factors, including pH, temperature, water hardness and the standing time of water in the pipes.

The present parametric value of 25 µg/L (S.I. 278 of 2007) will be reduced to 10µg/L Lead in 2013.

3.5.12 Manganese

Manganese is one of the most abundant metals in the earth's crust, usually occurring with iron. It is an essential element for humans and other animals. Its major use is in steel production. It can also be used as an additive in unleaded petrol, to increase the octane rating and reduce engine knocking.

3.5.13 Nickel

Nickel is used mainly in the production of stainless steel and nickel alloys. Nickel is an essential metal for human development, although its metabolism is not fully clear.

3.5.14 Nitrate and Nitrite

Nitrate and nitrite are naturally occurring ions that are part of the nitrogen cycle. The nitrate concentration in both groundwater and surface water is normally low, but can reach high levels as a result of leaching or run-off from agricultural land or contamination from human or animal wastes as a consequence of the oxidation of ammonia.

Nitrite is the intermediate in the oxidation of ammonia to nitrate, and so any water containing appreciable levels of nitrite is of questionable quality. The results for 2010 are summarised in Table 11. Private samples accounted for 90 % of the exceedances.

3.5.15 Selenium and Selenium Compounds

Selenium and selenium compounds are used principally in glass making and as pigments (coloring agents) for paints, plastics, ceramics and glazes. Selenium is an essential element for humans. It plays a crucial role in controlling the effects of thyroid hormone on fat metabolism.

3.5.16 Turbidity

Turbidity is a measure of the suspended material in water. It has become an increasingly important factor in determining water quality. Controlling turbidity at the waterworks is now used as a mechanism to prevent cryptosporidium outbreaks.

3.5.17 Zinc

Zinc is an essential trace element found in virtually all food and drinking water in the form of salts or organic complexes. It is vital for many biological functions such as disease resistance, wound healing, digestion and reproduction. The major uses of zinc include anti-corrosion coatings on steel (galvanizing), construction materials, brass, pharmaceuticals and cosmetics.

Although levels of zinc in surface waters and groundwater normally do not exceed 0.01mg/L and 0.05 mg/L respectively, concentrations in tap water can be much higher, due to dissolution of zinc from household plumbing. Human studies indicate that a guideline value for zinc is not necessary.



3.6 Haemodialysis Water

Haemodialysis units operate water treatment systems to produce purified water for use in Dialysis machines. The laboratory performed analysis on the 385 submitted samples. The parameters analysed include sodium, potassium, hardness and a range of metals.

3.7 Private Samples

The laboratory provides a service to the general public to investigate concerns or complaints about water quality. The number of samples tested for private individuals in 2010 was 887.

Table 11 Summary of drinking water results for 2010

Parameter	IARC Rating	Parametric Value	No. of Samples	No. of Exceedance (%)
Benzene	Group 1	1.0 µg/L	681	0 (0.0%)
Trichloroethene Tetrachloroethene	Group 2B	10 µg/L	681	4 (0.6%)
1,2 Dichloroethane	Group 2B	3.0 µg/L	681	0 (0.0%)
Colour	n/a	Acceptable to consumers and no abnormal change	5,067	1326 (6.4%)
Turbidity	n/a		5,076	1256 (5.0%)
Aluminium	n/a	200 µg/L	5,101	183(3.6%)
Nitrate	n/a	50 mg/L	5,305	13 (0.2%)
Nitrite	n/a	0.5 mg/L	5,323	8 (0.2%)
Ammonium	n/a	0.3 mg/L	5,204	108 (2.1%)
Iron	n/a	200 µg/L	5,096	425 (8.3%)
Manganese	n/a	50 µg/L	5,094	334 (6.6%)
Copper	n/a	2.0 mg/L	1,496	36 (2.4%)
Cadmium	Group 1	5.0 µg/L	1,397	4 (0.3%)
Lead	Group 2A	25 µg/L	1,801	103 (5.7%)
Arsenic	Group 1	10 µg/L	1,415	65 (4.6%)
Chromium	Group 1 ²	50 µg/L	1,393	5 (0.4%)
Nickel	Group 2B	20 µg/L	1,445	39 (2.7%)
Selenium	Group 3	10 µg/L	1,397	5 (0.4%)
Boron	n/a	1.0 mg/L	1,409	3 (0.2%)
Zinc	n/a	-	1,422	³ 6 (0.4%)

¹ Although there no health-based guideline values for colour or turbidity, levels of 20 mg/L Pt-Co and 4.0 NTU respectively are generally used as guideline values.

² Classification refers to hexavalent Chromium

³ The number of zinc samples which gave results >3mg/L. (There is no health-based guideline value for zinc although a level of >3mg/L may not be acceptable to consumers.)

3.8 Bathing waters

Bathing waters and inlet streams to bathing areas were tested for compliance with the Quality of Bathing Water Regulations 1992, S.I. No. 155 of 1992. This legislation will be replaced by the Bathing Water Quality Regulations 2008 (S.I. No. 79 of 2008) for the 2011 bathing water season. In total 291 samples were analysed. The parameters analysed include dissolved oxygen, pH, colour and ammonia. The vast majority of samples analysed were in full compliance with the legislation.

3.9 Pool Waters

The laboratory analyses chlorine/bromine levels, along with total dissolved solids and alkalinity of pool and jacuzzi waters. In 2010, 478 samples were analysed.

At present there is no legislation for the control of these parameters. 17 of the samples were found to contain > 10mg/L total chlorine. The total dissolved solids varied from < 10 to 6853mg/L, while the alkalinity levels varied from <10 to 987mg/L.

3.10 Effluents

The laboratory carries out a wide range of analysis on effluent samples. In total 111 samples were analysed. The parameters tested include Biochemical oxygen demand (BOD), chemical oxygen demand (COD), suspended solids, fats, oils and greases (FOGs), dissolved oxygen, phosphate (both soluble and total), nitrate, nitrite, ammonia and a range of metals.

4. AIR POLLUTION MONITORING

4.1 European Legislation

The current European legislative instruments governing air quality are the **Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive 2008/50/EC and Directive 2004/107/EC** (4th daughter directive from previous Framework directive).

The CAFE directive has replaced five existing legislative instruments and Directive 2004/107/EC will also be merged into the CAFE directive in the future. This will result in greater clarity and simplicity whereby a single directive replaces six separate pieces of legislation.

The CAFE directive sets out how Air Quality should be monitored, assessed and managed, and sets limits for the following parameters:

- Sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead.
- Benzene, carbon monoxide and ozone.

Directive 2004/107/EC sets target limits for the following parameters:

- Arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons.



4.2 National Legislation

The "Ambient Air Quality Assessment and Management Regulations 1999", S.I. No. 33 of 1999 has been the principal legislative instrument in air pollution control throughout 2010. At the time of writing, this had been replaced (May 2011) by the Air Quality Standards Regulations 2011, S.I. No. 180 of 2011 which is the transposition of the CAFE directive.

The remaining Directive, 2004/107/EC, was transposed into Irish Legislation in 2009 by S.I. No. 58 of 2009.

The country is divided 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 2010 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 January 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. The results for 2010 are shown in Appendix 6.

4.3.3 PM₁₀

PM₁₀ is the term used to describe particulate matter which is 10µm or less in diameter. These particles may consist of a complex mixture of soot, organic, and inorganic matter. There are many sources of PM₁₀, which include the combustion of diesel and solid fuels and dust from road traffic.

Concern about PM₁₀ levels relate to the respiratory problems caused by their inhalation.

The Air Quality Regulations require monitoring at two locations in Zone C. The EPA operates one such monitoring unit in a mobile facility. The other monitoring unit is operated by the laboratory at the Bodkin roundabout monitoring station.

The Regulations set a 24 hour average limit of 50 µg/m³ which is not to be exceeded more than 35 times a calendar year, and a yearly average limit of 40 µg/m³ for PM₁₀.

The 24 hour average limit was exceeded once during the year. The highest value recorded was 57 µg/m³. The daily average for the year was 16.4 µg/m³.

The results for the year 2010 are shown in Appendix 6.

5. PHARMACEUTICALS & TOXICOLOGY

5.1 Pharmaceutical Laboratory

Service to the Irish Medicines Board (www.imb.ie). The function of the 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 (a collaboration between regulatory medicine testing laboratories designed to improve communication, enhance cooperation and to harmonise 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 further information see www.edqm.eu, Control of Medicines Section)

Analysis

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 are 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.

During 2010, 82 samples of medicinal products were submitted for testing by the Irish Medicines Board/EDQM. Certificates of Analysis were issued for 85 samples, including some samples from the previous year.

Details of analytical findings may be found in the IMB 2010 Annual Report (see www.imb.ie).

There is a pressing need for additional laboratory personnel in this area. However, 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

To ensure quality and comparability of results within the Network, OMCLs must operate to a quality system based on ISO/IEC 17025. At the request of INAB (the Irish National Accreditation Board), a "Flexible Scope" approach was applied to a number of tests in the laboratory. The transition to flexible scope was officially approved by INAB in March 2010.

As an OMCL the laboratory is also required to operate to guidelines issued by the EDQM-OMCL Network and accepted by the EA (European Accreditation Cooperation) on a range of technical and quality assurance topics (see www.edqm.eu for more information).

Proficiency Testing Schemes

During 2010 the laboratory successfully took part in Proficiency Testing Schemes, organized by the EDQM and Pharmassure, covering the following areas: Assay by HPLC, Dissolution, pH, Density, Melting Point, Loss on Drying, Water Determination by Karl Fischer, Identification by IR, and UV Spectrophotometry.

Meetings

One member of staff attended the Annual Meeting of the EDQM European Network of OMCLs held in Split in May and the Annual CAP meeting held in London in November. Both trips were funded by the Irish Medicines Board.

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 samples "B-samples" taken under the Road Traffic Act are also independently analysed for alcohol. The number of such samples tested during 2010 was 21, of which 86 % were above the legal limit.

The total number of samples tested during 2010 was 198, made up as follows;

Ethanol (Post Mortem)	129
Ethanol (Road Traffic Act)	21
Proficiency Tests	39
Paraquat	6
Ethanol (Foodstuffs)	3

Quality System

The laboratory takes part in an External Quality Assessment Scheme (UKNEQAS) organized by Cardiff Bioanalytical Services Ltd and the Quartz Proficiency Testing Scheme for Driving Impairment organized by LGC.

6. COSMETICS

6.1 Cosmetics Legislation

In Ireland the European Communities (Cosmetic Products) Regulations – S.I. No. 870/2004, gives effect to EU “Cosmetics Directive” Council Directive 76/768/EEC and amendments. The European legislation has been “recast” into a new Regulation (EC No. 1223/2009) which comes into effect from 11th July 2013. The Directive & Regulations set out standards which must be met by the Cosmetics Industry.

6.2 Official Control and Enforcement of Cosmetics Legislation in Ireland

On the 1st of October 2010 the Irish Medicines Board, IMB, became the national Competent Authority for enforcement of cosmetics legislation. The IMB now co-ordinates cosmetics control and surveillance, e.g. joint IMB-HSE production of national Cosmetics Surveillance Plans has begun. A Cosmetics Safety Steering Committee is in place, with membership from the IMB and HSE, (membership to be extended in 2011). Within the HSE, the Cosmetics Control Group co-ordinates nationally HSE’s activities (RAPEX responses, sampling SOPs, training etc.). The National Standards Authority of Ireland (NSAI) has also formed a working group on cosmetics standards (Cosmetics Standards Advisory Group).



The OCCL, of which we are a member, is a network of Official Cosmetics Control Laboratories formed within the European Directorate for the Quality of Medicines and HealthCare (EDQM).

RAPEX, is the EU rapid-alert system for notifying hazards/risks associated with cosmetics and other consumer products:

http://ec.europa.eu/consumers/docs/110511_rapex_annual_report_2010_en.pdf

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

6.3 Results for 2010

Table 12 below summarises testing of cosmetics performed in this laboratory in 2010.

Table 12: Overall Cosmetics Testing Results 2010

Test Parameter	Cosmetic Types	Samples Tested	Complying	Non-complying
Formaldehyde	Hair Treatment products	31	16	15
Lead (Pb) ¹	Face paints, Children’s & General make up	1020	1018	2
Cadmium (Cd) ¹	Face paints, Children’s & General make up	1020	1020	0
Diethylene Glycol	Toothpaste	70	69	1
p-Phenylenediamine	Hair Dyes	29	29	0
Hydroquinone	Creams, Soaps etc.	39	39	0
Mercury	Creams, Soaps (Whitening)	43	43	0
General Labelling Examination	Make up, Face Paints, Toothpaste, Hair Dyes, Creams etc.	253	142	111
Salicylic Acid	Facial Cleanser	1	1	0
Methyldibromoglutaronitrile ²	Cream, Bubble Bath, Hair Products	4	4	0
N-Nitrosodiethanolamine ²	Mascara, Eyeliner	2	2	0
pH	Cleanser, Hair Product	2	2	0

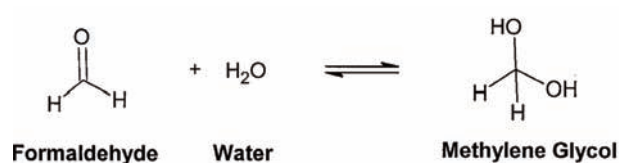
¹ 260 samples (largely multi-component cosmetics sets) consisting of 1020 sub-components were screened for lead & cadmium

² Analysis out-contracted

Note: Samples are submitted by the HSE authorized officers (Environmental Health Officers) to monitor compliance with the cosmetics regulations. Non-complying samples are dealt with by the EHOs in conjunction with the IMB as appropriate.

6.3.1 Formaldehyde in Hair-straighteners etc.

General: Formaldehyde is a highly active chemical with many uses, including functioning as a permitted preservative in cosmetics. Anhydrous formaldehyde is a gas under normal conditions, but it is generally used by industry as a solution in water (formalin). Formaldehyde reacts with water to form hydrated formaldehyde, known also as methylene glycol.



The reaction is reversible, i.e. the methylene glycol can release formaldehyde under certain conditions. Thus, although of a different chemical form to formaldehyde gas, formalin (or methylene glycol) solutions and formaldehyde can be treated as one in terms of safety/toxicity. Formaldehyde has high inhalation toxicity and is a known skin 'sensitiser'.

EU cosmetics legislation (see Section 6.1) regulates formaldehyde strictly, setting a maximum limit of 0.2% for formaldehyde¹ in general cosmetic products. Due to its high inhalation toxicity, formaldehyde is prohibited for use in aerosol dispenser sprays. All finished cosmetic products containing formaldehyde (or other preservatives which release formaldehyde) must be labelled with the warning "contains formaldehyde" where the concentration of the formaldehyde exceeds 0.05%.

Further to a consumer complaint, a sample of hair straightener was received for analysis in late 2009. The sample was found to contain excessive formaldehyde² (2% vs. legislative limit of 0.2%), resulting, ultimately, in a product withdrawal and an EU RAPEX Alert in 2010. This laboratory introduced new, official testing methodologies (UV and HPLC) for formaldehyde in 2010. The competent authority (IMB) initiated the national surveillance of 'equivalent' products available on the Irish hairdressing market, to establish if other producers were also using formaldehyde in their hair straightening products (see Results 2010, section 6.3.1.1).

¹ "formaldehyde and paraformaldehyde: (a) Products other than for oral hygiene – 0.2% (expressed as free formaldehyde);"

² Initial test out-contracted to German laboratory.

6.3.1.1 Results in 2010:

A total of 31 samples of hair straighteners/smoothing products were tested in 2010. Formaldehyde results ranged between "less than 0.04%" and 9.5%, with 16 samples exceeding the statutory limit of 0.2%. Four samples, whilst complying with the formaldehyde limit, were non-complying for labelling. The laboratory issued 13 Cosmetics Hazard/Contamination Reports (concerning 16 samples) to the EHOs and IMB, resulting in 5 cases of full EU-wide RAPEX Alerts.

The situation was unusual in that Ireland appeared to be the first country in Europe to have encountered and dealt with the problem. The formaldehyde issue represents the first case of cosmetics safety investigated jointly by the HSE, DoH/C and IMB.

During the investigation some of the industries involved questioned the official EU testing methodology, stating that the method itself was destructive, producing the free formaldehyde during the analysis. Also, the safety assessments of the products were challenged, with arguments made that the products contained methylene glycol, and not formaldehyde, i.e. the argument was made that methylene glycol was a separate chemical to formaldehyde.

To ensure that the official testing results were consistent, the laboratory organised an inter-lab trial of five of the products with the official Dutch cosmetics control laboratory (NLVWA). Overall the results were in excellent agreement, see table.



Formaldehyde in Hair Straighteners – Inter-Laboratory Comparison.

Sample	PAL Galway Colour Method (U.V.) (Dir 82/434/EEC) Formaldehyde (%)	PAL Galway HPLC Method (U.V.) (Dir 82/434/EEC) Free Formaldehyde (%)	NL VWA Total Formaldehyde (%)	NL VWA Free Formaldehyde (%)
1	2.2	2.0	2.06	2.13
2	1.7	1.9	1.69	1.81
3	1.7	1.7	1.66	1.8
4	0.16	0.10	0.19	0.18
5	Not Tested	1.80	1.76	1.96

In addition 4 of the hair straighteners were tested directly by a non-destructive method, ¹³C NMR. The NMR results* confirmed that excessive formaldehyde (as methylene glycol) was present in the hair straighteners, see below.

Sample Code	Dir 82/434/EEC HPLC method Formaldehyde (%)	*Direct ¹³ C NMR method Formaldehyde (%)
A	1.9	1.9
B	1.7	1.8
C	8.8	7.4
D	0.6	0.87

* ¹³C NMR testing was performed in the Chemistry Department, NUI Galway (Jeol 400MHz instrument)

The testing demonstrated that overall, the official methods were satisfactory.

During the Irish investigations, the Oregon Occupational Safety & Health Division (OSHA), and later Health Canada, were also involved with the issue, in their jurisdictions, following consumer complaints in the US and Canada. The IMB and DoH/C communicated results with the various EU bodies (EU Standing Committee, PEMSAC etc.).

In mid 2010 other EU member states also became involved. The German Risk Assessment Authority, BfR, (www.bfr.bund.de) issued an Opinion on formaldehyde-containing hair straighteners (BfR Opinion 045/2010) in November 2010; the potential harm to the health of users of such products (containing 1.8% formaldehyde) is stated clearly.

In conjunction with the EDQM, this lab helped set up a Proficiency Test Scheme for formaldehyde in cosmetics in 2010. Results obtained from the PTS scheme were satisfactory.

6.3.2 Heavy Metals

260 samples (lipsticks, lip gloss, face-paints, mascaras and make-up sets etc.) were tested here for Lead (Pb) and Cadmium (Cd) in 2010. Many were multi-component sets of different cosmetic types and colours; overall 1020 components or sub-samples were tested (see Table 13 for a summary of results obtained). The samples were screened initially by X-Ray Fluorescence (XRF) and then quantified by atomic absorption spectroscopy (AAS), if required. The results for the quantified samples are shown in the table below.

Table 13a: Lead Results for Cosmetics 2010 (AAS Results)

Lead (Pb)	
Results Range (mg/kg)	Number of Subsamples
<5.0	127
5.0 - 10.0	10
10.1 - 20.0	23
20.1 - 100	3
101 - 1,000	1
>1,000	0
TOTAL	164

Table 13b: Cadmium Results for Cosmetics 2010 (AAS Results)

Cadmium (Cd)	
Results Range (mg/kg)	Number of Subsamples
<0.25	132
0.25 - 1.0	2
1.1 - 2.0	8
2.1 - 5.0	11
>5.0	0
TOTAL	153

There are no specific limits set for Heavy Metals in the Cosmetics Directive or Regulations. A Lead (Pb) limit of 20mg/kg and a Cadmium (Cd) limit of 5mg/kg (limits developed by BfR/Germany) have been adopted as an interim measure for official control purposes. In 2010, 4 components exceeded the Lead limit of 20 mg/kg. There were no exceedences for Cadmium. This is a marked improvement compared to 2008 and 2009 where the number of exceedences for Lead were 77 and 31 respectively. The number of exceedences for Cadmium were 19 in 2008 and 3 in 2009. This demonstrates the benefit of this surveillance.

17 counterfeit samples of branded cosmetics were received from Dublin airport EHOs. One of these, a red lipgloss, contained 638mg/kg lead, and 14 were found to have labelling non-compliances.

A RAPEX alert resulted from a sample of a red lipstick, part of a children's make up set, which was found to contain 69mg/kg lead.

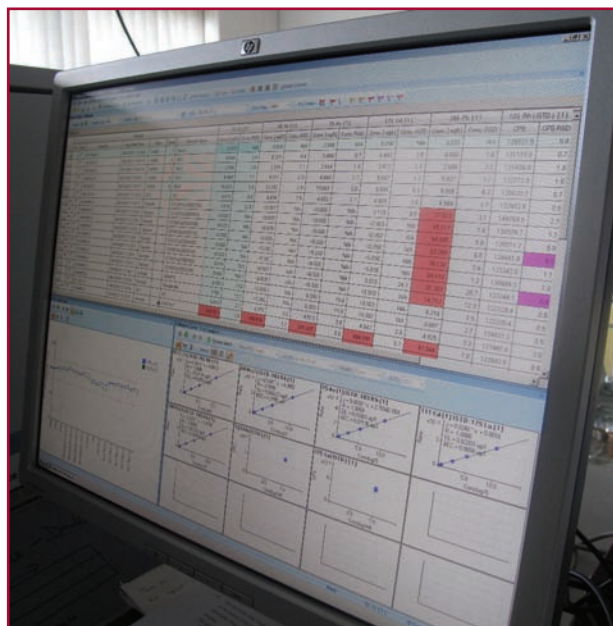
In late 2010, a number of samples were found to have elevated levels of Nickel, Antimony and Chromium. There are currently no specific EU or Irish limits for these metals in cosmetics; the matter has been referred to the IMB for further investigation.

6.3.3 Hydroquinone in Creams etc.

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

Hydroquinone (at any level) is prohibited for use as a skin-lightening agent.

During 2010, 39 samples were tested in the laboratory, none of which were found to contain hydroquinone. This shows a continuous improvement over 2008 and 2009 where 47% and 18% respectively of samples were found to contain hydroquinone. The results indicate that targeted enforcement in this area is having an effect.



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.

The laboratory was active in the OCCL network, assisted in organising and successfully took part in an EDQM-organised PTS for hydroquinone. Results were found to be satisfactory.

6.3.4 para-Phenylenediamine in Hair Dyes

29 samples of hair dyes were tested for para-phenylenediamine (PPD), a permitted hair colourant with allergic properties and an upper limit of 6%. None of the samples exceeded the limit of 6%, with just two samples containing detectable PPD (0.15 and 2.7%). A new limit of 2% para-phenylenediamine came into effect on July 15th 2010 (Directive 2009/130/EC).

6.3.5 Diethylene Glycol in Toothpastes

Following surveillance in 2009, a national survey of toothpaste, with an emphasis on low-priced/children's toothpastes, was programmed for 2010. Just one of the 70 samples tested had a level of DEG which was non-compliant (3.3 %, vs legislative limit of 0.1% European Communities (Cosmetic Products, Amendment) Regulations 2009).

6.3.6 Labelling of Cosmetics

253 samples were examined in 2010 for compliance with the labelling requirements in the Cosmetics Regulations (S.I. No.870 of 2004). 111 (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, storage symbols, dates of minimum durability and batch numbers.

6.3.7 Other Cosmetics Testing

Arising from a reported adverse reaction, a sample of facial cleanser was received for salicylic acid analysis. The result complied with the legislative limit.

Arising from independent RAPEX Alerts, 4 samples (see Table 12) were received for analysis of methyl dibromoglutaronitrile and 2 samples for N-nitrosodiethanolamine. Neither of these contaminants were found in the products tested (testing was out-contracted).

6.3.8 Summary of Cosmetics Hazard / Contamination Reports issued in 2010

Cosmetics samples are tested to ensure their safety and compliance with specific or general safety standards. Cosmetics Hazard/Contamination Reports are issued by the laboratory when the results of analysis indicate a particular hazard. Such reports require risk analysis to assess if the hazard represents a significant risk to consumers. The laboratory issued 16 Cosmetics Hazard / Contamination Reports in 2010, concerning: formaldehyde in hair treatment products (16 samples); Lead/Counterfeit (2 samples); produce with labelled banned ingredients, Methyl dibromoglutaronitrile (2 products) & Hydroquinone (1 product).

6.4 Resources etc.

Laboratory resources for Cosmetics testing are minimal and in the current economic climate, the provision of additional resources is unlikely. Consequently, the service provided in this area is restricted. The position is helped to some extent by the close co-operation and partnership approach adopted within the Public Analyst's Laboratory (PAL) service. The Dublin PAL is specialising in the microbiological testing of cosmetics, whilst the Cork and Galway labs each specialise in different chemical testing areas.

7. HUMAN BIO-MONITORING

Human Bio-monitoring (HBM) involves the determination of the levels of various parameters in human tissues (urine, blood, hair etc). HBM for environmental chemical pollutants is a direct measure of the levels of exposure and absorption/retention of such chemicals from the environment (food, water, air, cosmetics etc.).

DEMOCOPHES Human Bio-Monitoring Study

In June 2004 the European Commission recognised in its Environment and Health Action Plan the relevance of HBM and the need for more harmonised approaches in Europe to allow for better comparability of results and more efficient use of resources.

A working group of scientists and stakeholders from 35 Institutions in 27 Countries formed a **CO**nsortium to **P**erform **H**uman biomonitoring on a **E**uropean **S**cale (COPHES). This was launched in 2009 and is funded by the European Community's Seventh Framework Programme. The aim of COPHES is to design harmonised procedures for HBM studies so that results from studies performed across Europe are more comparable.

In September 2010, COPHES set up a feasibility study called DEMOCOPHES. DEMOCOPHES is an international study involving 16 European Member States. The purpose of the study is to determine levels of key environmental pollutants in populations across Europe, including members of the Irish population. The DEMOCOPHES pilot study will look at biomarkers for mercury in human hair and for cadmium, phthalates and environmental tobacco smoke in urine. As part of the project, samples and data will be collected from a cohort of children and their mothers in each participating country.

It is hoped that Ireland will participate in this European project in 2011-2012. Samples of urine and hair will be taken from the selected child-mother pairs in the latter part of 2011.

This laboratory, along with the other Irish Public Analyst Laboratories, will analyse the samples collected in Ireland. The testing laboratories are required to

participate in European Inter-laboratory Comparison testing schemes. If the laboratories perform well in the inter-laboratory testing they can then proceed to analyse the samples taken in the pilot study. At this time the Galway Public Analyst's Laboratory has already participated in the first round of the inter-laboratory testing and have performed very well based on the assigned values. Work is on-going to validate any methods that will be used for the DEMOCOPHES pilot study.

The main aim of the pilot study is to produce a standardised way of performing human bio-monitoring studies across Europe. In addition, data on exposure to mercury, cadmium, phthalates and environmental tobacco smoke for a subsection of European children and mothers will be obtained.

8. MISCELLANEOUS TESTING

In 2010, 34 'miscellaneous' samples were received in the laboratory. These included:

- 9 private samples of supplements for folic acid analysis
- 7 private samples from industry for metals analysis
- 4 samples regarding mould growth in a house
- 4 water samples (one contained a foreign body, one was out-contracted for Carbofuran analysis, and two samples were taken from a sterilizer for analysis)
- 2 samples of animal droppings
- 2 insects samples for identification
- 2 filter deposits
- 2 foreign objects associated with food
- 1 dust sample
- 1 urine sample for mercury analysis

9. QUALITY ASSURANCE

The laboratory assures the quality of the results it reports by applying a quality system which complies with an international ISO standard. The current relevant standard for this laboratory is ISO/IEC 17025:2005 'General Requirements for the Competence of Testing and Calibration Laboratories'. This standard contains detailed requirements for both the management of the laboratory and technical aspects of the laboratory's operation. The technical aspects include method validation, measurement traceability and measurement uncertainty.

9.1 Accreditation

Accreditation is a formal recognition of a laboratory's competence to carry out specific tests or type of tests. 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.

This laboratory was first granted accreditation for testing Fluoride in Drinking Water in 1989. Since that time, 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 Pharmaceutical products.

A full list of our accredited tests is available on the Irish National Accreditation Board website at <http://www.inab.ie/schemes/lab/testing/directory.html>

9.2 INAB Surveillance Audit

The laboratory is audited regularly by the Irish National Accreditation Board (INAB). Their purpose is to determine whether a laboratory is continuing to comply with the international ISO/IEC 17025 standard and INAB Regulations.

In November 2010, an audit was carried out by INAB on the laboratory. Once again, the audit was successful, with the auditors recommending an extension to our scope of accreditation as well as maintenance of our existing tests and procedures.

9.3 Proficiency Testing

Together with the use of validated methods, trained personnel, calibrated equipment and internal quality control, proficiency testing is an essential element in laboratory quality assurance. Proficiency testing schemes involve receiving and analysing test samples with unknown concentrations of analyte. The results are submitted to the scheme organisers who then inform the laboratory how they have performed in the scheme. This laboratory participates in a range of

international proficiency testing schemes including *inter alia*;

FAPAS: Food Analysis Performance Assessment Scheme, organised by the Food & Environment Research Agency (FERA), U.K.

CHEK: Organised by the Food and Consumer Product Safety Authority (VWA), The Netherlands.

Quasimeme: Quality Assurance of Information for Marine Environmental Monitoring in Europe. Quasimeme Project Office, The Netherlands.

Aquacheck, Pharmassure, Quartz, QDCS : Organised by Laboratory of the Government Chemist (LGC), UK. EDQM: European Directorate for the Quality of Medicines & HealthCare.

In 2010 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 very good.

Proficiency Testing Schemes – 2010

Scheme	Parameters Tested
FAPAS	Nutritional components - Nitrogen, Moisture, Ash, Fat
FAPAS	Sodium & Potassium – Snack Food, Meat, Prepared Meals, Juice
FAPAS	Aflatoxins – B₁, B₂, G₁, G₂, Total Aflatoxins - Nuts, Cereals
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	Allergens Peanut Protein (New in 2010)
FAPAS	pH, Brix
FAPAS	Food Additives – Sulphur Dioxide Fruit slurry, Meat
FAPAS	Food Additives – Benzoic Acid Soft Drinks
FAPAS	Food Additives – Nitrates and Nitrites Meats
FAPAS	Alcoholic Strength Whiskey
FAPAS	Butterfat
CHEK	Sorbic Acid, Benzoic Acid Wines, Salads Sulphite Wine
CHEK	Histamine
Quasimeme	Shellfish - Domoic and Epi-domoic Acid.
Quasimeme	Shellfish – Okadaic Acid, DTX toxins,
Quasimeme	Shellfish – AZA toxins – (AZA-1, AZA-2, AZA-3, AZA-Total)
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 – Dissolution testing , pH, Determination of water, Density
LGC /Pharmassure	Pharmaceutical Analysis – Assay by HPLC, UV Spectroscopy, pH, Density, Melting Point, IR Spectroscopy, Loss on Drying
UKNEQAS	Blood and Urine Alcohol
LGC QUARTZ	Blood Alcohol

10. STAFF TRAINING

Staff training is essential to ensure the laboratory continues to offer an up-to-date, relevant and high quality analytical service in the areas of Water, Food, Pharmaceutical, Air Monitoring, Cosmetic and Human Bio-monitoring testing. In addition, 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, Health & Safety, Information and Communication Technology and Dignity at work.

Staff attended Seminars and Conferences on analytical techniques and on general subjects pertaining to Food Safety (e.g. Nutritional Labelling Workshop organised by FSAI) and Human Bio-monitoring (organised in conjunction with the DEMOCOPHES project (see section 7)). 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 has continued to be significantly reduced this year. Most of the training staff received was 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.

11. MEETINGS/COMMITTEES

FSAI:

- Liaison Meetings with Public Analysts' Group
- Service Contract Meetings with Western Area HSE
- Allergen Labelling & Analysis Working Group
- Gluten Working Group
- EHO-PAL Liaison Group
- FSAI-EHO-PAL National Group on Sampling Programmes
- Molluscan Shellfish Safety Committee
- Inter-Agency Meetings on Food Control
- Legislation Committee (FSAI-Dept. of Health & Children...) & Sub-Committees
- Bottled Water Guidance Note Drafting Committee
- Cross Agency Labelling Enforcement Working Group
- Scientific Sub-committee [Additives, Contaminants.]

safefood/HSE: IT system for Laboratory Service

HSE Regional Food Committee [HSE West]

HSE Food Sampling Review Group

Cosmetics Control Group HSE

Cosmetics Safety Steering Group (IMB, HSE,...)

OCCL: Organisation of Cosmetics Control Laboratories (EU led)

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, CAP meeting

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

Community Services Management Meetings

12. 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 Virtual Private Network (VPN), 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 for 2010 (connection to the EPA Environmental Data Exchange Network (EDEN)) but this project was paused until at least the second half of 2011 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 Western Region Food Sampling/Analysis (Chemical) Programme for 2010

Jan 11 – 15		Food Supplements 40 (Food Irradiation, General /Labelling exam'n, Heavy Metals)	Specified Seeds 50 Soft Drinks, Prepared Salads, etc (Sorbates/Benzoates, pH)	~50 Specified Foods FSAI Salt Survey (Na/K)
Jan 16 – 31	35 Gluten-free Foods (Gluten)	30 Fresh or Processed Specified Fish (Mercury)		
Feb. 1 – 15	2x9 Various Port Fish (Biogenic Amines)	40 Miscellaneous Foods With Labelled Sodium or Salt Levels or related Claims (Na/K, Labelling)	50 Food Contact Materials (Pb, Cd)	30 Ethnic Foods from Ethnic Premises (General Examination and Labelling etc.)
Feb. 16 – 28		40 Sulphited Foods (SO ₂)	35 Allergens Peanut-free Foods (Peanut Protein)	Folic Acid Method Development Supplements etc.
Mar. 1 – 15	~100 Specified Foods FSAI Salt Survey (Na/K)	25 Oils/Food Supplements (Benzo-(a)-pyrene)		
Mar. 16- 31		20 Infant & Follow on Formula (Heavy Metals, General Examination/ Labelling etc.)	30 Specified Foods Rice Flours, Maize Meals Corn Products, Polenta (Fumonisin / Aflatoxins)	
Apr. 1- 18		40 Dairy Products Milk, Cream, Goats' Milk etc. (ALP, Inhib'y subs. screen)		10 Shellfish Imports etc (ASP Toxins)
Apr. 19 – 30	25 Canned Fish in Oil (Benzo-(a)-pyrene)	40 Local Production / Manufacturing Bakery Products, Sandwiches, Jams, Others (General /Compositional, Labelling..)	35 Gluten Free Foods Listed in Coeliac Society Book (Gluten)	~100 Specified Foods FSAI Salt Survey 2010 (Na/K)
May 3 – 17	2x9 Various Port Fish (Biogenic Amines)	~70 Weaning Foods FSAI (Fat, Na/K, Protein, Folic Acid, Gluten)	40 Cheese, Milk, Carrots Beans, Pulses, Eggs... (Pb/Cd)	
May 18 – 31	40 Potato Products, Sausages, Burgers, etc. (SO ₂)			30 Soy Sauces (3-MCPD)
June 1 – 14	4x9 Various Port Fish (Biogenic Amines)		Safefood Survey	35 Allergens Peanut-free Foods (Peanut Protein)
June 15 – 30	30 Scombroid Fish etc. (Biogenic Amines)	0 Food Contact Materials Cutlery/Metal Kitchen Utensils (Heavy Metals) Method Development	40 Fresh & Processed Vegetables (Pb/Cd)	10 Shellfish (ASP, DSPs, AZAs) Imports etc.

Appendix I. Outline Summary of HSE Western Region Food Sampling/Analysis (Chemical) Programme for 2010 (continued)

July 1 – 16	Various Port Fish (Biogenic Amines) 3x9	Soft Drinks, Beers, Wines (SO ₂ /General Exam'n) 40	Bottled Waters (Na, Compositional, Labelling etc.) 40	Cured Meats (Sodium, Nitrates & Nitrites) 40
July 17 – 31		"Ready' or Prepared Meals with Labelled Sodium/Salt & Fat Levels (Na/K/Fat & Labelling) 50		Whiskey, Gin, Vodka (Adulteration) 20
Aug. 1 – 15	Various Port Fish (Biogenic Amines) 4x9		Chinese Medicines (Benzo-(a)-pyrene, General Examination, Food Irradiation & Labelling) 25	
Aug. 16 – 31		Specified Foods ~100 FSAI Salt Survey (Na/K)	Sulphited Foods (SO ₂) 40	Allergen Labelling Survey Method Development & Survey, Milk Protein ~100
Sept. 1 – 13	Various Port Fish (Biogenic Amines) 3x9		Gluten Free Foods (Gluten) 35	Molluscan Shellfish Imports etc. (ASPs, DSPs, AZAs) 10
Sept. 14- 30	Scombroid Fish, etc. (Biogenic Amines) 30		Imported Fish or Shellfish (Pb, Cd, Hg) 30	
Oct. 1- 17		Specified Foods 30 Satay Sauces, Ground Almonds, Rice, Flours, etc. (Aflatoxins)		Locally Manuf'd/ Processed Foods with labelled Sodium (Na) or Salt Levels (Na/K & General Labelling) 50
Oct. 18 – 31	Raw Meats Poultry & Pork (ABS Screening Test) 40		Confectionery Bars etc. (Gen. Exam'n, Labelling, Na/K) 35	
Nov. 1 – 15	Various Port Fish (Biogenic Amines) 2x9	Specified Foods 30 Peanut Butter, Marzipans & Ground Almonds, Peanut Bars etc, (Aflatoxins)	Takeaway/Service Sector Rice & Cereal from Health Food Shops (Heavy Metals) 40	
Nov. 16 – 30	Gluten Free Foods (Gluten) 35	PARNUTS Samples (General / Compositional, Labelling) 30	Sulphited Foods (SO ₂) 40	Miscellaneous Foods Herbs, Spices, Supplements etc. (Irradiation) 40
Dec. 1 – 15	Various Port Fish (Biogenic Amines) 2x9		Christmas Bakery Products (General Exam'n, Labelling, Na/K or Fat) 40	
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, and in consultation with lab.			

Appendix 2: Routine Official samples received from H.S.E. West, for the period from 01/01/2010 to 31/12/2010
Appendix 2: Food Complaint samples (from H.S.E. West & the Public) from 01/01/2010 to 31/12/2010

Food Category	No. of Samples with Infringements		Chemical / Physical Contamination		Compositional		Labelling (1) & Presentation		Other		No. of Samples Received		% with infringing	
	Routine	Complaint	Routine	Complaint	Routine	Complaint	Routine	Complaint	Routine	Complaint	Routine	Complaint	Routine	Complaint
1. Dairy Products	15	4	0	2	0	2	15	0	0	0	82	7	18.29	57.14
2. Egg and Egg Products	0	2	0	0	0	2	0	0	0	0	6	3	0.00	66.66
3. Meat and Meat Products, Game and Poultry	19	11	0	9	9	2	10	0	0	0	211	15	9.00	73.33
4. Fish, Shellfish and Molluscs	11	0	1	0	3	0	7	0	0	0	182	7	6.04	0.00
5. Fats and Oils	0	0	0	0	0	0	0	0	0	0	1	0	0.00	0.00
6. Soups, Broths and Sauces	5	0	0	0	0	0	5	0	0	0	76	0	6.58	0.00
7. Cereals and Bakery Products	57	9	0	7	1	1	56	1	0	0	266	15	21.43	60.00
8. Fruit and Vegetables	9	10	1	8	2	1	6	1	0	0	119	10	7.56	100.00
9. Herbs and Spices	8	0	0	0	0	0	8	0	0	0	18	0	44.44	0.00
10. Non-Alcoholic Beverages	16	11	1	8	0	3	15	0	0	0	130	17	12.31	64.71
11. Wine	0	0	0	0	0	0	0	0	0	0	3	2	0.00	0.00
12. Alcoholic Beverages (Other than Wine)	1	0	0	0	0	0	1	0	0	0	28	0	3.57	0.00
13. Ices and Desserts	0	0	0	0	0	0	0	0	0	0	2	0	0.00	0.00
14. Cocoa and Cocoa Preparations, Coffee & Tea	2	0	0	0	0	0	2	0	0	0	11	1	18.18	0.00
15. Confectionery	8	1	0	1	0	0	8	0	0	0	103	3	7.77	33.33
16. Nuts and Nut Products, Snacks	2	2	0	2	0	0	2	0	0	0	26	2	7.69	100.00
17. Prepared Dishes	20	6	0	5	1	0	19	1	0	0	108	8	18.52	75.00
18. Foodstuffs Intended For Special Nutritional Uses	3	1	0	1	1	0	2	0	0	0	141	6	2.13	16.66
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	0	0	0	0	0	0	0	0	0	0	47	0	0.00	0.00
21. Others	18	7	0	7	6	0	12	0	0	0	107	9	16.82	77.77
Totals	194	64	3	50	23	11	168	3	0	0	1667	105	11.64	61.90

Note: / Refers to labelling infringements under the Health Legislation only

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

Department/Agency Authority	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.) Fruit/Vegetables, etc. Milk/Dairy, etc. Fish, Shellfish, etc.	'Production' etc. Meat Plants, Farms, etc. Dairy Plants, etc. Fishing Boats, Processing plants, Fish Farms, etc.	DAFF Veterinary Officers & 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 (Food, Drink, Food-contact Materials)	All stages Retail, Wholesale, Manufacturing, Catering, Import, etc.	HSE Environmental Health Officers	HSE Food Microbiology Labs & HSE Public Analysts' Labs²	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, SafeFood, for more details on food testing labs in Ireland.

² The Public Analysts' Laboratory Service operates as a single, co-ordinated service, with national Specialisations and Core Testing.

Core Testing: Microscopy/Complaints; General Labelling etc.
Examples of **Specialisations** include:

- **Dublin PAL:** Food Contact Materials (Overall Migration, BADGE, Furan, Aromatic amines, ESBO, ITX etc.); Processing Contaminants (Acrylamide, Melamine, PAHs...); Mycotoxins
- **Cork PAL:** Pesticides (Infant Formulae...); GMO Testing; Vitamins (A,B,C,D,E...); Congeners (spirits etc.); Oil Profiles (Saturated/Unsaturated etc.); Food Irradiation screening; Food Adulteration; also Cosmetics (UV filters, phthalates etc.).
- **Galway PAL:** Folic Acid; 'Salt' (Na/K) national surveys; Food Allergens; Marine Biotoxins; Food Irradiation; Cosmetics (Heavy Metals, Allergens, p-PDA, DEG etc.); VOCs in Drinking & Bottled Waters; also Pharmaceuticals (IMB).

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; Nitrites/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.										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Aflatoxins	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%	0/49 0%
Fumonisin	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%	0/21 0%
Ochratoxin A	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	N/T
Patulin	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	N/T
Lead (Pb)	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%	0/390 0%
Cadmium (Cd)	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%	4/381 1.0%
Mercury (Hg)	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%	2/233 0.9%
Arsenic (As)	N/T	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%	0/67 0%
Benzo-[a]-pyrene	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%	0/57 0%
3-MCPD	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	0/18 0%
Nitrates	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	N/T
Marine Biotoxins: DSPs	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%	0/14 0%
AZAs	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%	0/14 0%
ASPs	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%	0/30 0%
Gluten Gluten Free (GF) Foods	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%	4/333 1.2%
Benzene	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%	N/T
Anti-bacterial Substances (ABS) EC 4-Plate Test	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%	0/32 0%
AV/DPTGs(Oils)	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	N/T
Histamine/ Biogenic Amines	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%	5/289 1.7%
Sorbates/ Benzoates	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%	0/34 0%
Sulphites	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%	9/213 4.2%
Nitrites / Nitrates	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%	4/32 12.5%
Artificial Sweeteners (i.e. Acesulfame K, Aspartame & Saccharin)	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%	N/T
Food Irradiation	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%	0/56 0%
Food Complaints	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%	64/105 61.0%
Peanut	N/T	N/T	N/T	N/T	N/T	N/T	N/T	N/T	N/T	N/T	0/169 0%

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 2010

FLUORIDATION OF WATER SUPPLIES :- GALWAY

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Ballinasloe	12	0.25 – 0.68	0.63
Clifden	12	0.48 – 1.12	0.82
Dunmore / Glenamaddy	11	0.65 – 0.78	0.71
Galway City	99	0.63 – 0.81	0.68
Inishere	1	<0.1	<0.1
Inishmore	5	<0.1 - 0.12	<0.1
Kinvara	8	<0.1	<0.1
Luimnagh Waterworks	12	0.61 – 0.72	0.67
Mid-Galway Regional	12	0.53 – 0.83	0.73
Mountbellew	12	0.66 – 0.83	0.72
Oughterard	12	0.41 – 0.72	0.68
Portumna	12	0.27 – 0.65	0.61
Spiddal	12	0.52 – 0.67	0.61
Tuam R.W.S.S.	24	0.63 – 0.79	0.68

FLUORIDATION OF WATER SUPPLIES :- MAYO

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Achill	12	0.38 – 0.83	0.64
Ballina	24	0.58 – 1.09	0.69
Erris	12	0.57 – 0.85	0.68
Kiltimagh	12	0.57 – 0.87	0.74
Lough Mask Regional	12	0.72 – 0.81	0.75
Shrulle	12	0.58 – 0.88	0.70
Swinford	12	0.31 – 0.95	0.76
Westport	12	0.52 – 0.74	0.61

FLUORIDATION OF WATER SUPPLIES :- ROSCOMMON

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Ballinlough Loughglynn	11	0.14 – 0.74	0.67
Boyle / Ardcarne	12	0.13 – 1.01	0.19
Castlerea Regional	12	0.62 – 0.93	0.75
Castlerea Urban	12	0.80 – 0.96	0.90
Cortober	1	0.62	0.62
Grangemore	1	<0.1	<0.1
Mount Talbot / Four Roads	13	<0.1 – 0.52	0.43
North East Regional	12	0.16 – 0.92	0.19
North Roscommon Regional	13	0.48 - 0.69	0.55
Roscommon Town (Central)	12	0.54 - 0.75	0.66
South Roscommon Regional	13	<0.1 - 0.57	0.16

Appendix 5: Fluoridation of Water Supplies – HSE West for 2010

FLUORIDATION OF WATER SUPPLIES :- DONEGAL

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Buncrana	14	0.1 – 0.80	0.71
Bundoran	14	0.55 - 0.72	0.71
Carndonagh Mixed	14	0.51 – 0.69	0.66
Cranford	13	<0.1	<0.1
Cresslough / Dunfanaghy	15	<0.1 - 0.82	<0.1
Donegal / Eske	15	0.57 – 0.76	0.69
Falcarragh / Gortahork	12	<0.1	<0.1
Frosses / Inver	12	<0.1 - 0.62	<0.1
Glenties / Ardara	11	<0.01	<0.1
Inishowen East	12	0.67 – 0.76	0.73
Letterkenny	36	0.70 – 0.80	0.75
Lettermacward	11	0.62 – 0.72	0.67
Lough Mourne	19	0.45 – 0.79	0.63
Milford	13	<0.60 – 0.86	0.65
Pollan Dam	15	<0.1	<0.1
Rosses Regional	30	<0.1 - 0.76	<0.1
Tory Island	4	<0.1	<0.1

FLUORIDATION OF WATER SUPPLIES :- SLIGO/LEITRIM

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Kilsellagh Farnaghardy	12	0.62 – 0.78	0.71
Lough Gill	26	0.33 – 0.76	0.67
Lough Easkey	12	0.60 – 0.84	0.72
Lough Talt	12	<0.1 - 0.67	0.60
North Leitrim Regional	12	<0.1 - 0.62	<0.1
South Leitrim Regional	12	0.49 – 0.82	0.68
Sligo North Regional Supply	12	0.13 – 0.77	0.59
Sligo South Regional	12	0.45 – 0.62	0.53
Killaraght	12	0.13 – 0.56	0.17

FLUORIDATION OF WATER SUPPLIES :- LIMERICK

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Abbeyfeale	1	<0.1	<0.1
Adare	5	<0.1 – 0.71	<0.1
Clouncagh	1	0.54	0.54
South West Regional/Mount Plummer	1	0.67	0.67
South West Regional/Gurrane	1	0.53	0.53
Kilmallock	1	<0.1	<0.1
Limerick City	16	0.35 - 1.08	0.62
Newcastle West	1	<0.1	<0.1
Rathkeale	5	<0.1	<0.1
Ballyneety	11	0.46 - 0.68	0.61
Castleconnell	12	0.47 - 0.70	0.61

Appendix 5: Fluoridation of Water Supplies – HSE West for 2010

FLUORIDATION OF WATER SUPPLIES :- CLARE

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Kilkee	12	0.55 - 0.74	0.72
Clarecastle	9	0.74 - 0.80	0.78
Ennis	28	0.66 - 0.81	0.71
Ennistymon	13	0.60 - 0.71	0.66
Kildysart	16	0.43 - 0.72	0.53
Lisdoonvarna	11	0.65 - 0.72	0.68
Milltown Malbay	10	0.66 - 0.79	0.71
Shannon	12	0.64 - 0.90	0.76
West Clare New Doolough	12	0.57 - 0.88	0.71
West Clare Old Doolough	12	0.70 - 0.84	0.72
Limerick	12	0.46 - 0.78	0.63
Rockmount	2	0.61 - 0.62	0.62

FLUORIDATION OF WATER SUPPLIES :- NORTH TIPPERARY

Location	Number of Samples	Range (mg/L)	Median (mg/L)
Borrisokane	4	0.72 - 0.79	0.73
Clareville	12	0.35 - 1.01	0.65
Doone	1	<0.1	<0.1
Murroe	12	0.71 - 0.76	0.73
Nenagh	12	0.50 - 0.57	0.54
Roscrea	16	<0.1 - 0.75	0.65
Thurles	27	<0.1 - 1.03	0.68

Appendix 6:

Concentration of Smoke & Sulphur Dioxide in the atmosphere during 2010 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	8	1	31	19	8	35
February	6	1	13	21	8	35
March	7	1	14	17	7	40
April	6	1	14	19	1	40
May	4	1	9	22	7	47
June	4	1	9	27	12	47
July	3	1	12	19	4	39
August	3	1	11	23	8	44
September	5	1	20	20	1	62
October	11	1	36	23	14	32
November	15	1	33	20	4	44
December	18	1	40	15	5	29
Average	8	1	20	20	7	41

Appendix 6:

Concentration of Smoke & Sulphur Dioxide in the atmosphere during 2010 at the Galway Waterworks site.

	Microgrammes Per Cubic Metre					
	Smoke			Sulphur Dioxide		
	Average Reading	Lowest Reading	Highest Reading	Average Reading	Lowest Reading	Highest Reading
January	3	1	16	20	7	51
February	3	1	11	20	6	44
March	3	1	11	10	4	27
April	1	1	4	20	7	39
May	1	1	5	20	1	38
June	1	1	3	18	3	31
July	1	1	3	18	3	41
August	2	1	9	34	12	67
September	1	1	4	14	1	39
October	2	1	5	25	5	43
November	3	1	5	27	5	49
December	4	1	15	26	18	43
Average	2	1	8	21	6	43

Appendix 6:

**R + P PARTISOL PLUS MODEL 2025 SEQUENTIAL AIR SAMPLER for 2010
 PM₁₀ RESULTS MASS CONCENTRATION (M.C) µg/m³ 2010**

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	31	10	42	12	< 5	17	13.3	-	20.3	9.7	22.8	17.0
02	43	12	40	8	6	16	15.5	-	21.8	10.5	20.8	37.4
03	11	15	25	6	8	19	12.3	-	24.3	9.7	-	35.6
04	21	12	46	7	11	16	13.4	-	16.1	17.0	-	32.0
05	5	17	33	15	7	9	10.7	-	10.6	16.6	-	56.5
06	14	15	33	-	8	7	8.3	3.9	5.3	12.5	-	18.5
07	29	23	26	14	14	8	18.8	-	8.5	14.6	-	20.7
08	21	37	33	13	-	9	9.0	8.2	11.7	21.3	-	27.9
09	23	41	42	19	-	12.3	6.0	6.7	13.5	31.0	-	17.0
10	17	39	50	28	-	13.4	8.8	7.3	6.9	35.3	18.0	11.5
11	13	39	26	23	11	8.1	-	7.4	7.2	33.7	23.1	18.3
12	10	26	14	31	10	12.4	-	7.0	15.3	21.3	12.2	23.0
13	15	22	8	26	10	8.0	-	5.5	15.0	27.3	13.4	25.3
14	14	12	14	28	15	8.1	-	7.1	12.8	18.8	20.3	30.0
15	8	7	16	28	15	7.3	-	9.2	13.3	7.7	24.2	13.6
16	15	12	25	24	7	5.6	-	5.5	11.8	24.7	10.0	9.8
17	17	24	20	19	15	6.2	-	7.4	10.5	19.1	10.3	9.1
18	26	11	18	12	8	16.6	-	10.2	11.8	13.7	15.5	-
19	22	18	31	12	5	15.9	-	13.0	7.9	11.5	20.3	-
20	37	17	16	19	12	9.5	-	12.2	21.2	17.6	30.5	-
21	11	12	-	23	16	13.5	-	13.0	12.5	11.8	20.8	-
22	33	28	-	24	21	13.6	-	7.0	7.7	9.8	22.2	-
23	46	25	-	24	11	10.0	-	6.5	6.0	8.8	26.2	-
24	24	11	14	27	-	9.2	-	10.2	12.6	25.0	10.1	-
25	34	7	21	9	-	11.8	-	18.1	14.0	16.5	5.7	-
26	39	5	23	10	12	11.0	-	11.2	14.9	10.7	5.5	-
27	10	22	8	10	7	17.8	-	6.3	13.2	19.4	10.4	-
28	9	17	12	10	8	9.6	-	9.2	14.3	15.2	25.0	-
29	10	-	6	9	7	11.0	-	9.9	15.9	22.7	31.7	-
30	13	-	4	6	6	10.0	-	14.6	11.2	20.3	17.3	-
31	11	-	11	-	12	-	-	16.1	-	17.6	-	-
Monthly Mean	20	19	23	17	10	11	12	9	13	18	18	24
No. of Days exceeding 50µg/m³	0	0	0	0	0	0	0	0	0	0	0	1

No. of Days exceeding 50µg/m³ YEAR 2010: 1

ANNUAL MEAN = 16.4

Appendix 7.



Public Analyst:

Mr. Rory Mannion

Deputy Public Analyst:

Vacant (Since November 2009 due to embargo)

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 Ms. Caroline Lupton Ms. Louise Mannion Ms. Hilary Hardy
Asst. Staff Officer:	Ms. Mary Mulvaney (Retired February 2010)
Clerical Officers:	Ms. Eileen Mannion Ms. Attracta Lohan Ms. Aine Mahoney Vacant position (Since Oct 2007 due to embargo)
Housekeeper:	Ms. Theola Busch



Mary Mulvaney

Assistant Staff Officer

Mary Mulvaney retired in February 2010, after 34 years of service to the Western Health Board and the HSE.

Mary joined the staff in the Public Analyst's Laboratory as a Clerical Officer in 1976. Unusually for an administrative grade, Mary has spent all those 34 years at the laboratory.

She was an adept and skilled presence in the office for all those years, a constant support to the service, and a great resource in the administration of the laboratory.

She supported the laboratory through periods of great change and expansion of the service, including more recently the introduction of two new computer systems.

Mary had a detailed and comprehensive knowledge of the administrative system within the laboratory and could always be relied upon to answer a query or to know the right person to contact.

We wish Mary a very long, healthy and happy retirement and we hope she enjoys the additional time she will have with her friends and family and her grandson James.

Glossary of Abbreviations

AAS	Atomic Absorption Spectroscopy
ADI	Acceptable Daily Intake
BfR	German Risk Assessment Authority
BIP	Border Inspection Posts
CODEX	Codex Alimentarius Commission
DAFF	Department of Agriculture, Fisheries and Food
DOH/C	Department of Health and Children
EDQM	European Directorate for the Quality of Medicines and HealthCare
EHO	Environmental Health Officer
ELISA	Enzyme-linked immunosorbent assay
FSAI	Food Safety Authority of Ireland
FSLs	Food Safety Laboratory Service
GC	Gas Chromatography
HACCP	Hazard Analysis and Critical Control Point
HPLC	High Performance Liquid Chromatography
HSE	Health Service Executive
IARC	International Agency for Research on Cancer
ICP-MS	Inductively coupled plasma mass spectrometry
IMB	Irish Medicines Board
INAB	Irish National Accreditation Board
IR	Infra-Red
NCA	National Consumer Agency
NMR	Nuclear Magnetic Resonance
NRL	National Reference Laboratory
NSAI	National Standards Authority of Ireland
OCCL	Official Cosmetic Control Laboratories
OMCL	Official Medicines Control Laboratories
PAL	Public Analyst Laboratory
PAH	Polycyclic Aromatic Hydrocarbon
PCCC	Primary Continuing and Community Care
PEMSAC	Platform of European Market Surveillance Authorities for Cosmetics
PTS	Proficiency Testing Schemes
QA	Quality Assurance
RAPEX	EU Rapid Alert System for Non-Food Products
RASSF	EU Rapid Alert System for Food and Feed
safefood	safefood, The Food Safety Promotions Board (FSPB)
S.I.	Statutory Instrument
SOPs	Standard Operating Procedures
UHG	University Hospital, Galway
UV	Ultra-violet
VWA	Food and Consumer Product Safety Authority of The Netherlands
XRF	X-Ray Fluorescence