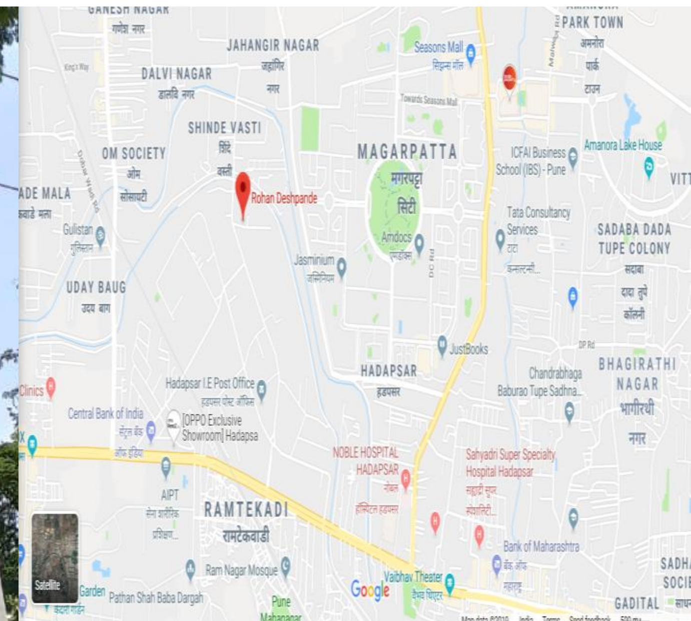
FOOD HYGIENE & HEALTH LABORATORY

Sr. No. 126/10, Plot No. 1, Hadapsar Industrial Estate,
Hadapsar, Pune – 411 013.

Location & Establishment

S. No. 126/10, Plot No. 1, Hadapsar MIDC Rd, Hadapsar Industrial Estate, Hadapsar, Pune, Maharashtra 411013



OUR POLICY

Traceability

Process Flow

Training/ Monitoring

Quality Control (ILC/PT)

QUALITY

PROFESSIONAL SERVICES

TIMELINESS

CONFIDENTIALITY & IMPARTIALITY

CUSTOMER SATISFACTION

CONTINUAL IMPROVEMENT

Competent Personnel

Certified Reference Material

Calibrated Equipment

Valid Methods

OUR PROFILE

- Food Hygiene & Health Laboratory (FHHL) is a Commercial Testing Laboratory for Food, Water and Environmental samples
- Registered under the 'Ministry of Micro, Small and Medium Enterprises (MSME)' with UAN No. MH26E0042631
- Total built up area of the laboratory is 14,000 sq. ft. on a 10,000 sq. ft. plot
- Testing disciplines: Chemical, Biological & Mechanical

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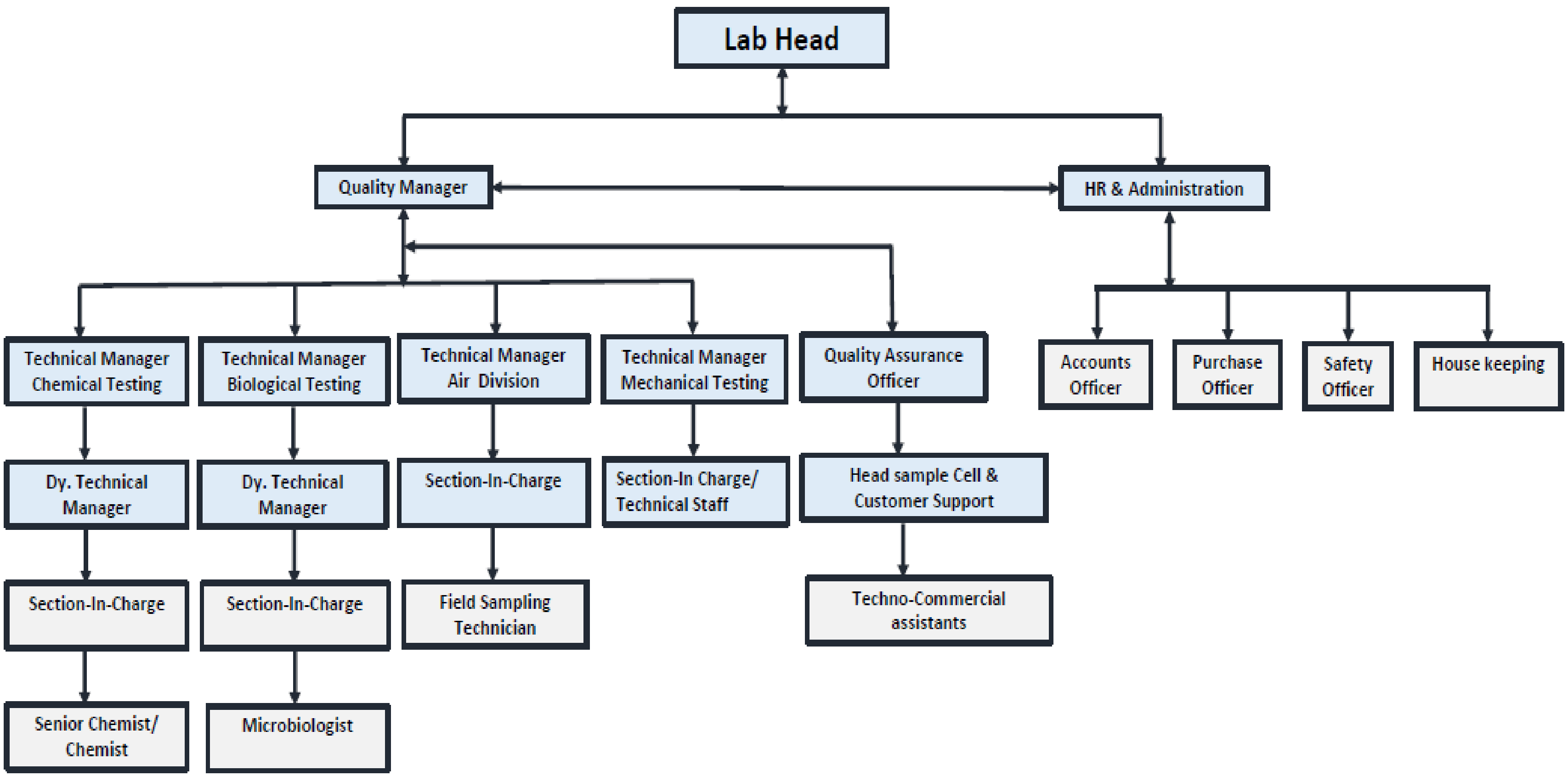
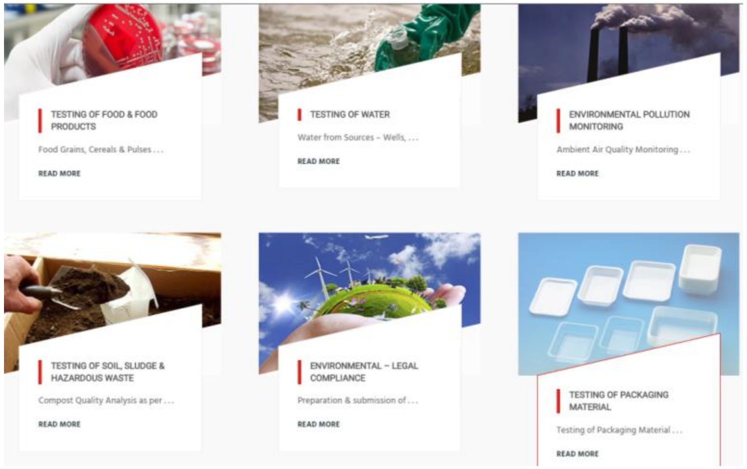
ORGANIZATION CHART- FHHL



OUR SERVICES

FHHL specializes in diversified testing activities like,

- ✓ Food & Agricultural products
- ✓ Water & Waste water
- ✓ Soil & Sludge
- ✓ Residues & Contaminants
- ✓ Allergens
- ✓ Paper & Pulp
- ✓ Pharmaceuticals
- ✓ Packaging material &
- ✓ Environmental pollution monitoring



OUR EXPERTISE

FHHL has a Team of Experienced Technicians, Certified Food Analysts, Experts & Professionals, focused on delivering services for

- ✓ Laboratory analysis
- ✓ Environmental monitoring
- ✓ Method development
- ✓ Consultancy in various fields including-
- ❑ Laboratory set-up,
- ❑ Method Development,
- ❑ Laboratory Quality Management System,
- ❑ Regulatory aspects

OUR CREDENTIALS

Accredited by **NABL as Testing Laboratory as per the Standard ISO / IEC 17025 : 2017** – in Chemical, Biological & Mechanical Disciplines of Testing

Recognized by **Bureau Indian Standards for Packaged drinking water (IS 14543, IS 13428) & Packaging Material (IS 15410, IS 15609)**

Recognized as a Environmental Laboratory under EPA 1986 by **Ministry of Environment & Forests & Climate Change (MoEF & CC)**

FSSAI recognized and notified food laboratory under Section 43 of FSS Act, 2006

Our SCOPE of
Services

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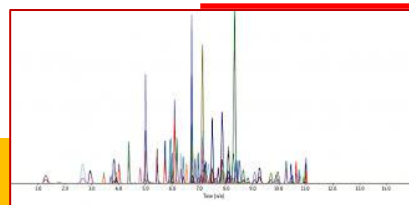
AGRICULTURAL & FOOD PRODUCTS WE DEAL WITH

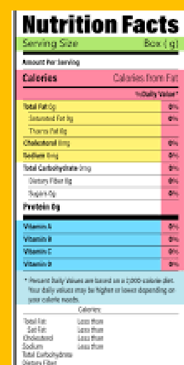
- Food Grains, Cereals & Pulses
- Animal Feed
- Nutritional Supplements
- Infant Foods and cereal products
- Tea / Coffee / Chicory/ Cocoa & their products
- Milk / Dairy Products
- Sugar & sugar products
- Jaggery
- Spices, Condiments & related products
- Oils, fats and their Products
- Bakery & Confectionary products
- Snacks

- Fruits, Processed Fruits and Vegetables
- Alcoholic / Non-alcoholic drink & products
- Snacks & Ready to eat foods
- Meat & Poultry Products
- Seafood
- Cooked Food (Hospitals, Canteens, Caterers & Hotels)
- Cooked Food testing for ICU & ICCU patients
- Frozen / Processed/Retort/Canned Foods
- Raw Food
- Ice cream

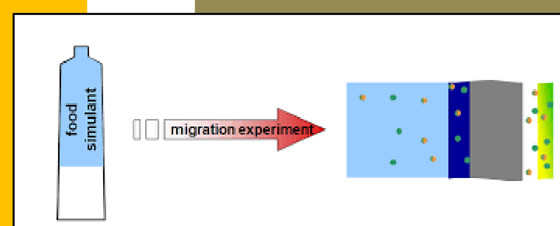
TESTING OF FOOD & AGRICULTURAL PRODUCTS: OUR CAPABILITIES

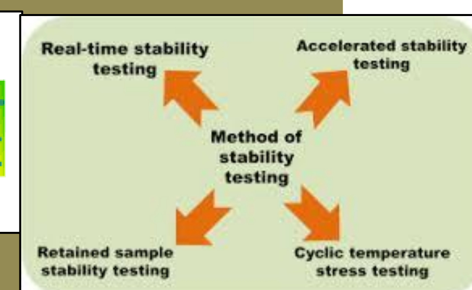


- Nutritional Analysis for labeling
- Shelf life (Accelerated & Real time)
- Proximate analysis
- Amino acid profile
- Fatty acid profile
- Aflatoxins
- Heavy metals
- Vitamins
- Minerals
- Pesticides/Herbicides/ Insecticides/
- Plant Growth Regulators



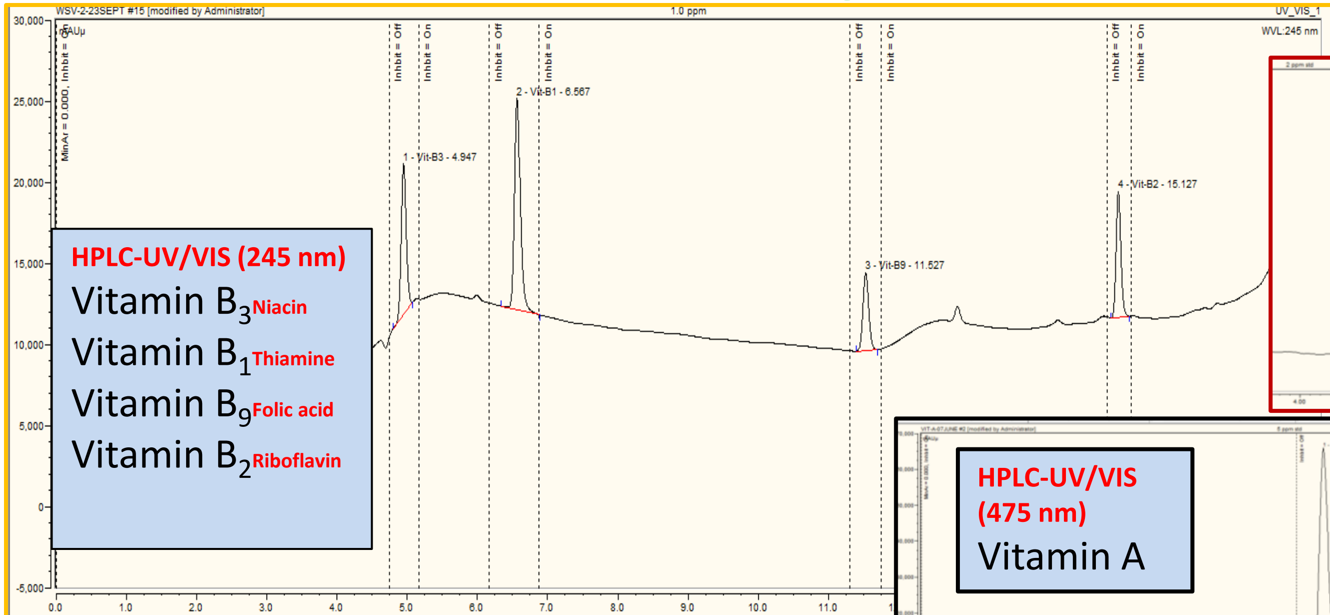
- Microbiological analysis (Bacterial Pathogens/Yeast, Mold & Fungi)
- Organic Contents
- Food adulterants
- Drug residues
- Migration tests (Food grade packaging)

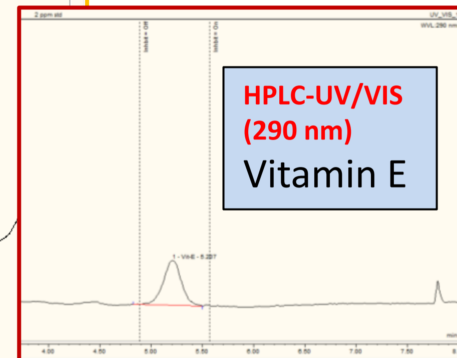


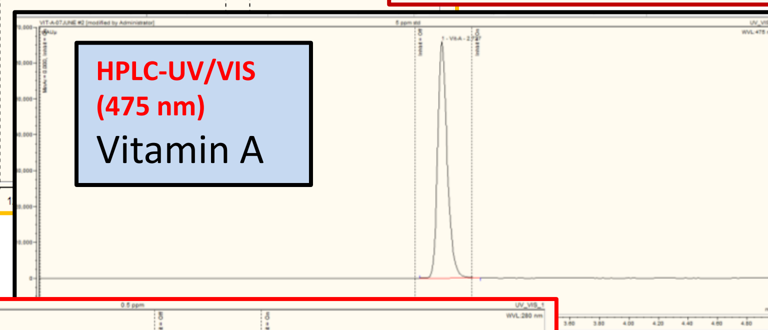


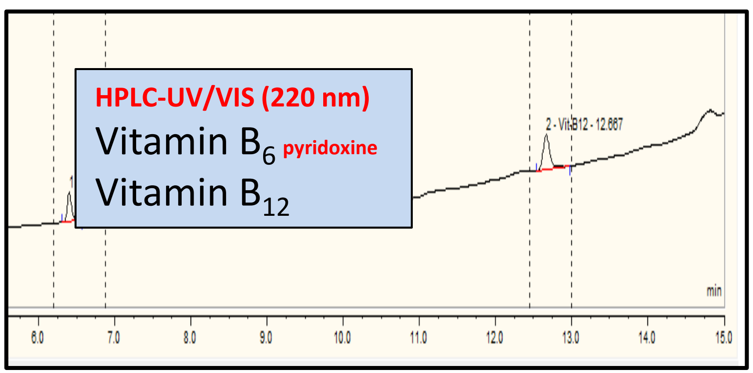
TESTING OF FOOD & AGRICULTURAL PRODUCTS

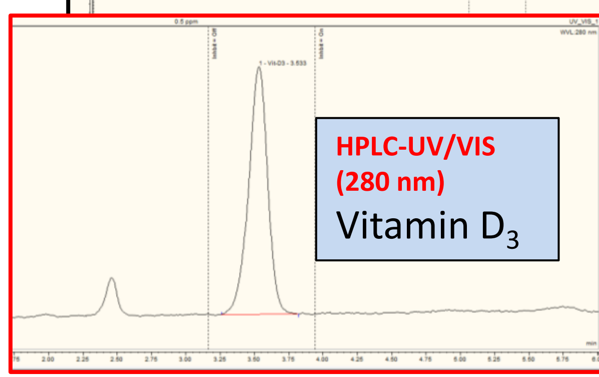
Water & Fat Soluble Vitamins in Food and Pharma samples using HPLC-UV/VIS





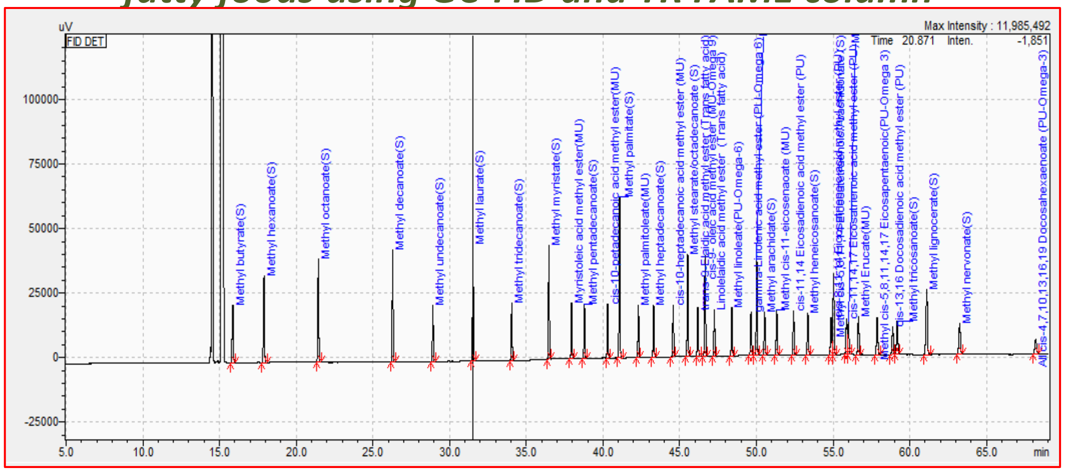


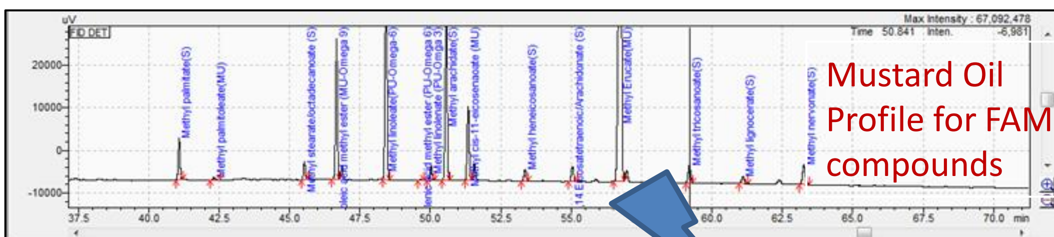




TESTING OF FOOD & AGRICULTURAL PRODUCTS

Analysis of 37 Fatty Acid Methyl Esters in cooking oils and fatty foods using GC-FID and TR FAME column





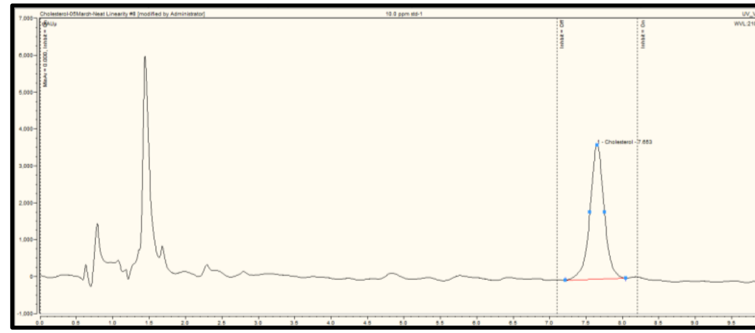
Results View - Compound Table

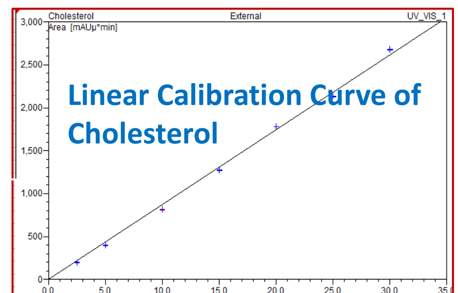
Peak Table | Compound | Group | Calibration Curve

ID#	Name	Ret. Time	Area	Area%	Conc.
26	Methyl heneicosanoate(S)	53.365	14316	0.864	400.000
27	cis-8,11,14 Eicosatrienoic acid methyl ester (PU)	No peak is detected.			
28	Methyl cis-5,8,11,14 Eicosatetraenoic/Arachidonate (S)	55.049	21046	1.271	400.000
29	cis-11,14,17 Eicosatrienoic acid methyl ester (PU)	No peak is detected.			
30	Methyl Behenate/docosanoate(S)	No peak is detected.			
31	Methyl Erucate(MU)	56.758	772574	46.641	0.000
32	Methyl cis-5,8,11,14,17 Eicosapentaenoic(PU-Omega 3)	No peak is detected.			
33	cis-13,16 Docosadienoic acid methyl ester (PU)	No peak is detected.			
34	Methyl tricosanoate(S)	59.201	25348	1.530	400.000
35	Methyl lignocerate(S)	61.098	10546	0.637	400.000
36	Methyl nervonate(S)	63.270	33017	1.993	400.000

Erucic acid methyl ester

Analysis of Cholesterol in fatty foods





No.	Ret.Time min	Peak Name	R-Square %	Points	Cal.Type	Auto.Recal.	Slope	Corr.Coeff %
1	7.65	Cholesterol	0.997	21	Lin	ON	87.1481	99.91
Average:					n.a.	n.a.	87.1481	99.9151

HPLC-UV/VIS (210 nm)
Cholesterol

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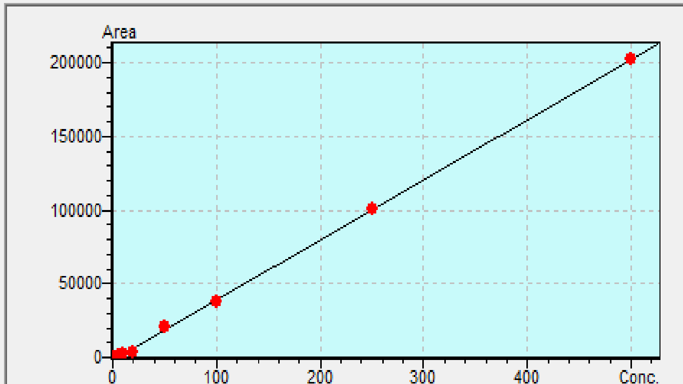
TESTING OF FOOD & AGRICULTURAL PRODUCTS

Pesticide Residues Analysis in Cereals By GC-MS/MS: Method Validation



Y = 407.8256X - 1875.74
R^2 = 0.9994022
R = 0.9997011

External Standard
Curve: Linear
Origin: Not Forced
Weighting Method: None

Mean RF : 262.2039
RF SD : 155.9707
RF %RSD : 59.48453

Level	Conc.	Mean Area	SD	%RSD		Area1		Area2		Are
1	0.000000	0			☑	0	☐		☐	
2	5.00000	881	102.6282	11.65127	☑	996	☑	731	☑	
3	10.0000	1,786	248.7186	13.92471	☑	2,187	☑	1,873	☑	
4	20.0000	3,009	245.9257	8.173910	☑	3,438	☑	2,755	☑	

- Level 2 : 5.0000
  - PRE SPIKE (
  - PRE SPIKE (
  - PRE SPIKE (
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  - PRE SPIKE (
  - PRE SPIKE (
- Level 3 : 10.000
  - PRE SPIKE (
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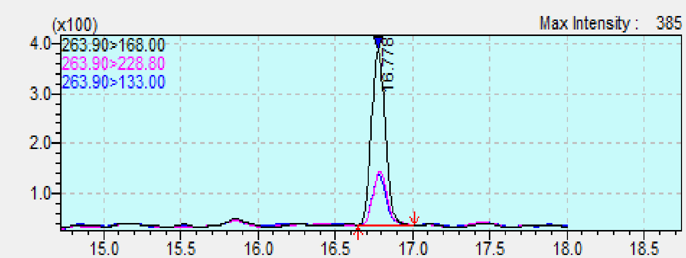
  - PRE SPIKE (
  - PRE SPIKE (
  - PRE SPIKE (
- Level 4 : 20.000

Single | Multi



Type	m/z	Inten.	Act %	Set %	Disp.
Target	263.90>168.00	565	100.00	100.00	☑
Ind.1	263.90>228.80	123	21.77	81.45	☑
Ind.2	263.90>133.00	300	53.10	64.93	☑

ID# 13 View Edi

ID#	Name	Ret.Tim	Conc	Area	Height	S/N
1	Dichlorvos	5.992	10.38641	4836	895	12.25
2	Phenol, 4-bromo-2-chloro-	6.186	9.71499	8406	1405	11.98
3	Fenobucarb	11.582	10.38783	71020	11172	3.57
4	Propoxur	11.657	10.66477	54678	8908	64.26
5	Bendiocarb	13.060	11.80116	29931	4846	119.30
6	Trifluralin	13.191	9.76143	13596	2329	154.24
7	Phorate	13.754	16.94839	1729	357	39.67
8	alpha-BHC	13.739	11.13213	21407	3276	68.66
9	beta-BHC	15.038	10.91349	20109	3097	63.71
10	gamma-BHC (Lindane)	15.310	9.73928	16362	2598	53.45
11	Propentamphos	15.752	10.78708	41375	6704	48.58
12	delta-BHC	16.526	11.09255	17120	2741	15.00
13	Chlorothalonil	16.778	10.90988	2187	348	24.83
14	Paraoxon methyl	16.547	11.28672	11694	1714	6.54
15	Etrimfos	17.134	9.21856	6877	1142	14.66
16	Iprobenfos	17.367	11.19570	35867	5665	247.83
17	Parathion-methyl	18.717	10.54531	14779	2332	85.70
18	Heptachlor	18.996	11.50462	16192	2634	55.97
19	Malaoxon	18.990	13.55943	5330	665	0.06
20	Propanil	18.276	10.15068	70241	7543	68.79
21	Alachlor	19.185	10.49263	19676	3085	28.41
22	Metalaxyl	19.502	10.50647	15438	2248	10.87
23	Metalaxyl M (Mefenoxam)	19.502	11.02110	16292	2293	11.09
24	Fenitrothion	20.278	11.43610	15391	2512	11.55
25	Aldrin	20.842	11.08872	2718	405	16.41
26	Malathion	21.011	10.58615	26145	4361	8.15
27	Phorate sulfone	21.147	10.93575	24132	3569	0.74
28	Phorate sulfoxide	21.149	9.45935	21009	3342	15.27
29	Chlorpyrifos	21.493	12.73885	30517	4802	16.26
30	Parathion	21.519	10.35246	41910	6221	21.91
31	4,4'-Dichlorobenzophenon	21.516	10.87778	140082	20401	77.32
32	Dicofol deg. (DCBP)	21.515	10.49801	131118	19547	12.74
33	Tetraconazole	22.149	12.69717	9206	1526	28.30
34	Heptachlor-exo-epoxide	23.106	11.22858	2795	441	21.22
35	Heptachlor-endo-epoxide	23.109	13.01714	1079	219	7.87
36	Pendimethalin	23.283	9.38187	10981	1881	25.56
37	Fipronil Sulfide	23.622	10.90331	32389	5198	17.59

Param's | Results | GroupParam's

TESTING OF WATER & WASTE WATER

- Water from Sources – Wells, Bore wells, Taps, Storage Tanks, River, Ponds, Lake
- Drinking Water as per IS 10500
- Purified Water (RO/ UV treated)
- Packaged Drinking Water as per IS 14543
- Packaged Natural Mineral Water as per IS 13428
- Swimming Pool Water
- Industrial Process Water
- Industrial & Domestic Waste Water (Effluent)

For – Chemical , Microbiological, Heavy Metals & Pesticide Residue Analysis

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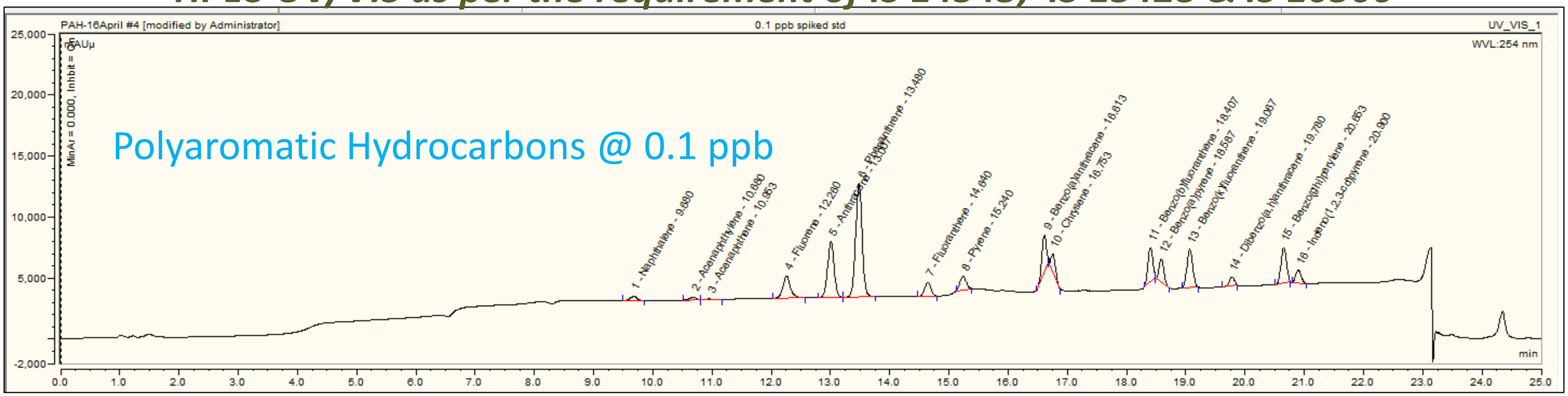
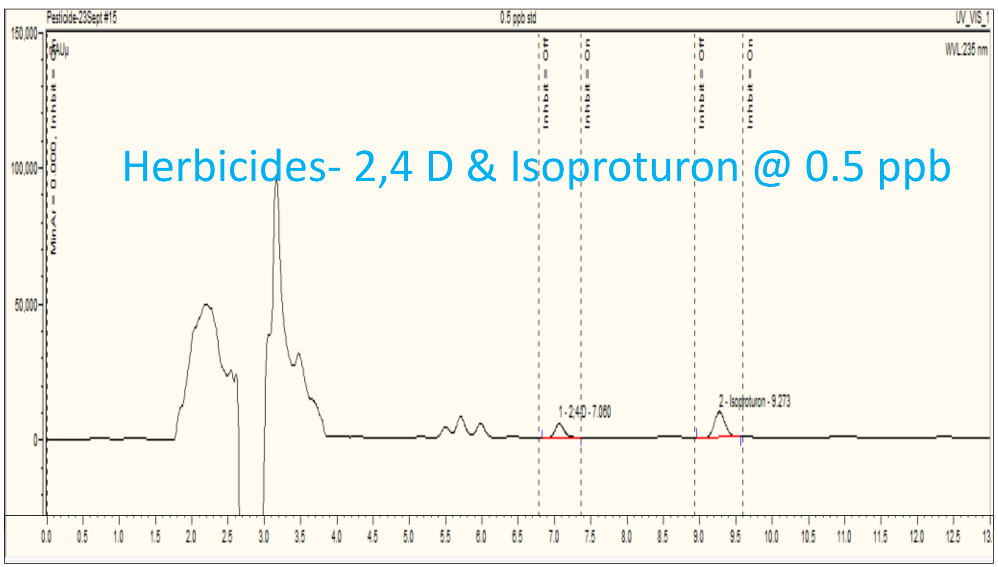
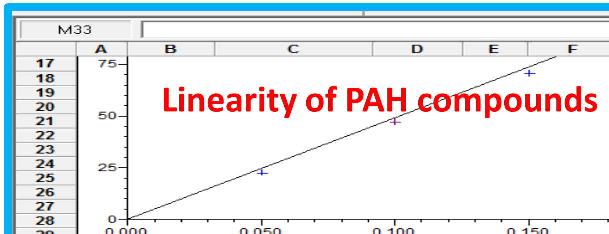
TESTING OF WATER/ WASTE WATER

Analysis of Pesticides and Polyaromatic Hydrocarbons in drinking water by HPLC-UV/VIS as per the requirement of IS 14543, IS 13428 & IS 10500





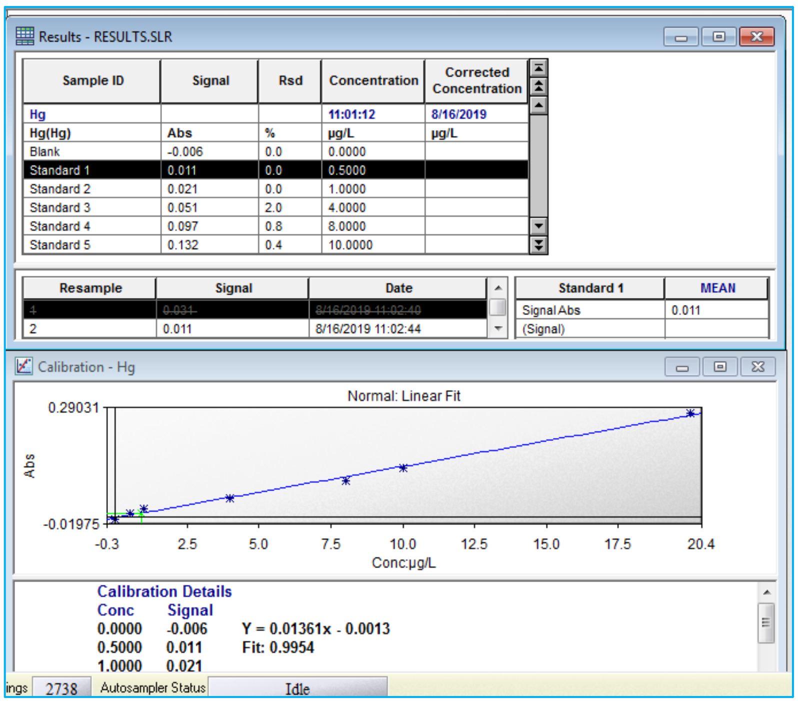


No.	Ret.Time min	Peak Name	R-Square %	Points	Cal.Type
1	9.68	Naphthalene	0.996	5	Lin
2	10.68	Acenaphthylene	0.992	5	Lin
3	10.95	Acenaphthene	0.998	5	Lin
4	12.26	Fluorene	1.000	5	Lin
5	13.01	Anthracene	0.999	5	Lin
6	13.48	Phenanthrene	1.000	5	Lin
7	14.64	Fluoranthene	0.990	5	Lin
8	15.24	Pyrene	0.999	5	Lin
9	16.61	Benzo(a)anthracen	0.993	5	Lin
10	16.75	Chrysene	0.994	5	Lin
11	18.41	Benzo(b)fluoranthe	0.997	5	Lin
12	18.59	Benzo(a)pyrene	0.995	5	Lin
13	19.07	Benzo(k)fluoranthe	0.997	5	Lin
14	19.78	Dibenzo(a,h)anthra	0.995	5	Lin
15	20.65	Benzo(ghi)perylene	0.995	5	Lin
16	20.90	Indeno(1,2,3-cd)pyr	0.992	5	Lin
Average:					n.a.

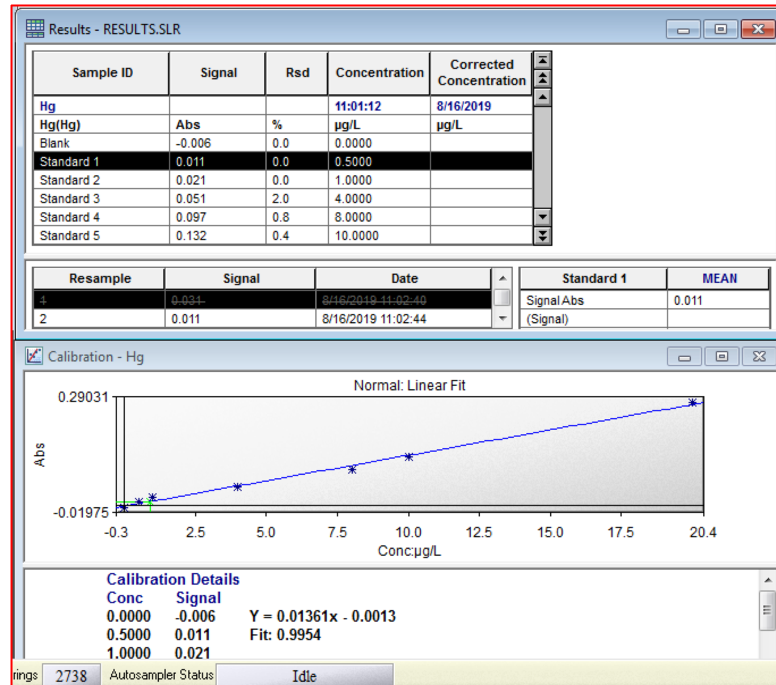
TESTING OF WATER/ WASTE WATER

Analysis of Metal Contaminants in Water/ Waste Water/ Food Samples using Atomic Absorption Spectrophotometer (Flame/Hydride Generator/Graphite Furnace)

Analysis of toxic metals (e.g. Hg) using AAS with Hydride Generator



Analysis of Heavy metals (e.g. Ni) using AAS-Flame



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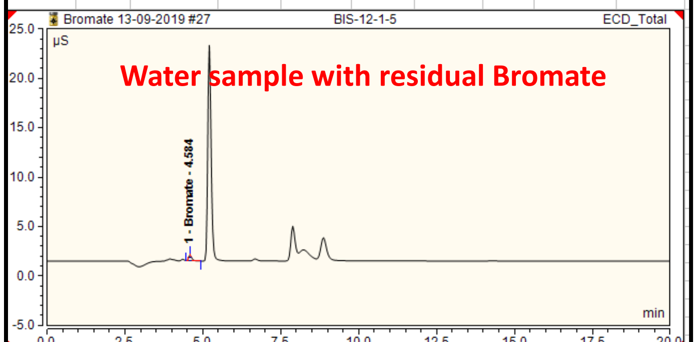
TESTING OF WATER/ WASTE WATER

Analysis of ionic contaminants (Anions/Cations) in drinking water Samples using Ion Chromatography

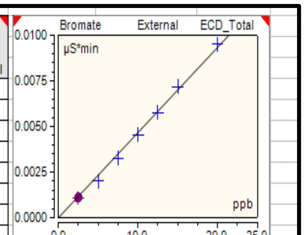
Instrument Method:	Bromate	Inj. Date / Time:	14-09-2019
Operator:	Admin	Run Time:	20.00



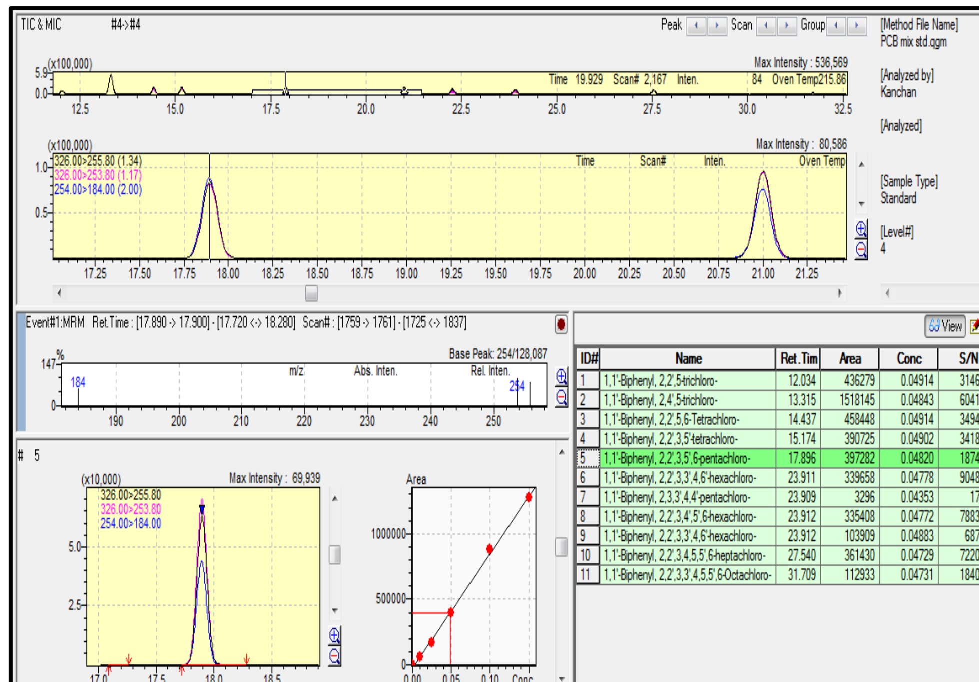
No.	Time min	Peak Name	Width min	Height µS	Rel.Area %	Area µS*min	Plates (USP)	Plates (EP)	Amount ppb
1	4.584	Bromate	0.180	0.582	100.00	0.067	10362	10547	116.0190
		AVERAGE:	0.180	0.582	100.000	0.067	10,362.	10,547.	116.019

Linear Calibration Curve: Bromate

Injection Name	Ret.Time min ECD_Total	Area µS*min ECD_Total	Height µS ECD_Total	Amount ppb ECD_Total
	Bromate	Bromate	Bromate	Bromate
2.5 ppb	4.800	0.0011	0.010	2.346
5.0ppb	4.807	0.0020	0.018	4.269
7.5ppb	4.807	0.0033	0.028	6.993
10.0ppb	4.814	0.0045	0.039	9.721
12.5ppb	4.800	0.0058	0.050	12.337
15.00ppb	4.814	0.0072	0.068	15.396
20.0ppb	4.810	0.0095	0.090	20.337
Average	4.807			
Rel. Std. Dev.	0.117 %			



Analysis of Polychlorinated Biphenyls in drinking water Samples using Solid Phase Extraction & GC-MS/MS Analysis



ID#	Name	Ret.Tim	Area	Conc	S/N
1	1,1'-Biphenyl, 2,2',5-trichloro-	12.034	436279	0.04914	3146.45
2	1,1'-Biphenyl, 2,4',5-trichloro-	13.315	1518145	0.04843	6041.11
3	1,1'-Biphenyl, 2,2',5,6-Tetrachloro-	14.437	458448	0.04914	3494.50
4	1,1'-Biphenyl, 2,2',3,5'-tetrachloro-	15.174	390725	0.04902	3418.37
5	1,1'-Biphenyl, 2,2',3,5',6-pentachloro-	17.896	397282	0.04820	1874.98
6	1,1'-Biphenyl, 2,2',3,3',4,6'-hexachloro-	23.911	339658	0.04778	9048.55
7	1,1'-Biphenyl, 2,3,3',4,4'-pentachloro-	23.909	3296	0.04353	17.71
8	1,1'-Biphenyl, 2,2',3,4',5',6-hexachloro-	23.912	335408	0.04772	7883.92
9	1,1'-Biphenyl, 2,2',3,3',4,6'-hexachloro-	23.912	103909	0.04883	687.25
10	1,1'-Biphenyl, 2,2',3,4,5,5',6-heptachloro-	27.540	361430	0.04729	7220.02
11	1,1'-Biphenyl, 2,2',3,3',4,5,5',6-Octachloro-	31.709	112933	0.04731	1840.85

Type	m/z	Intensity	Set%	Act.%	Ref.Band
Target	326.00>255.80	114228	100.00	100.00	--
Ref.Ion1	326.00>253.80	128087	67.94	112.13	30
Ref.Ion2	254.00>184.00	79734	66.32	69.80	30
Ref.Ion3					
Ref.Ion4					

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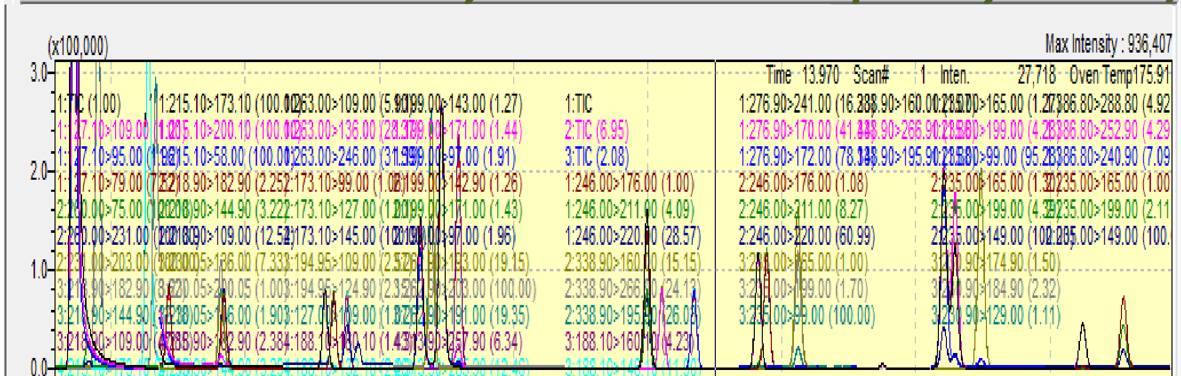
TESTING OF WATER & WASTE WATER

Pesticide Residues Analysis in Water Samples By GC-MS/MS: Method Validation

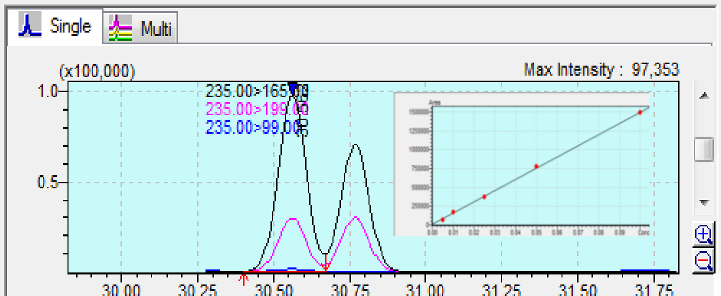


Level	Conc.	Mean Area	SD	%RSD	Area1	Area2	Area3	Area4	Area5	Area6
1	0.005000	70,005	6,224.6	8.8917	70,166	62,088	77,231	70,549	63,731	76,262
2	0.010000	172,064	19,615.	11.400	159,634	195,955	157,796	165,481	198,061	155,454
3	0.025000	374,901	12,080.	3.2223	354,701	385,125	380,828	366,216	384,840	377,693
4	0.050000	772,033	97,287.	12.601	639,698	824,352	839,412	654,225	828,651	845,859
5	0.100000	1,490,826	144,645	9.7023	1,303,300	1,604,938	1,547,551	1,310,48	1,614,560	1,564,125

ID# 24 View Edit

ID#	Name	Ret.Tim	Area	Conc
1	Monocrotophos	14.468	240684	0.0482
2	Phorate	14.591	285	0.0413
3	alpha-BHC	14.778	158391	0.0461
4	Atrazine	15.768	46689	0.0431
5	beta-BHC	15.868	120049	0.0440
6	gamma-BHC (Lindane)	16.100	132164	0.0447
7	Paraoxon methyl	17.086	946196	0.0484
8	delta-BHC	17.136	118244	0.0441
9	Parathion-methyl	19.012	186958	0.0426
10	Malathion	19.190	525479	0.0432
11	Malaoxon	19.189	600728	0.0426
12	Alachlor	19.425	221979	0.0428
13	Phorate sulfoxide	20.838	830539	0.0427
14	Phorate sulfone	21.201	808535	0.0432
15	Aldrin	20.993	18250	0.0470
16	Chlorpyrifos	21.502	149500	0.0473
17	o,p'-DDE	25.018	340698	0.0470
18	alpha-Endosulfan	25.301	16809	0.0449
19	Butachlor	25.910	123202	0.0439
20	Dieldrin	27.098	24705	0.0436
21	p,p'-DDE	27.256	256911	0.0453
22	o,p'-DDD	27.843	592621	0.0478
23	beta-Endosulfan	29.432	17953	0.0439
24	p,p'-DDD	30.562	639698	0.0485
25	o,p'-DDT	30.769	459468	0.0455
26	Ethion	31.253	780019	0.0462
27	Endosulfan sulfate	33.170	49587	0.0445
28	p,p'-DDT	33.916	449191	0.0454

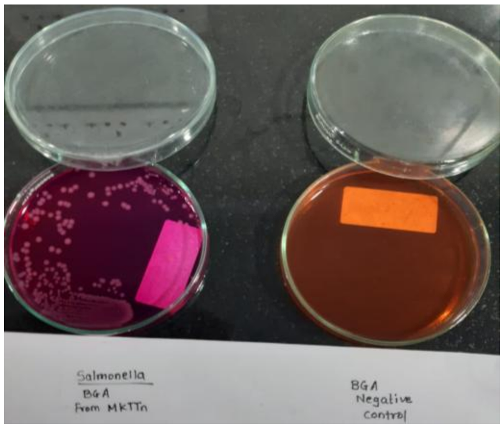
Extraction of water sample using SPE technique



Type	m/z	Inten.	Act%	Set%	Disp.
Target	235.00>165.00	100583	100.00	100.00	✓
Ind.1	235.00>199.00	30107	29.93	44.96	✓
Ind.2	235.00>99.00	1299	1.29	0.67	✓

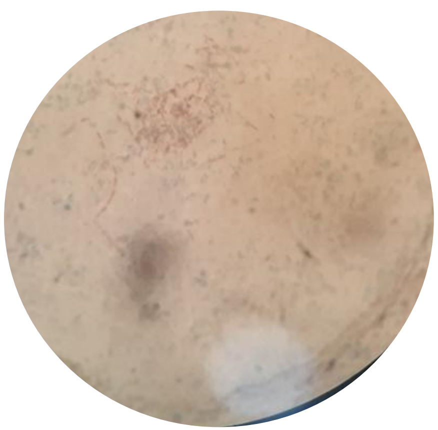
Microbiological Testing of Water/Waste Water/Food Samples

Salmonella on BGA from MKTTn

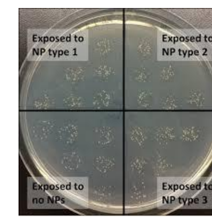


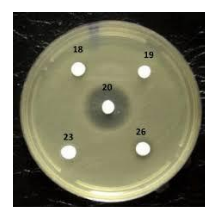
Clostridium perfringenes
in Ellner's medium

Spore Staining of
Clostridium perfringenes



AIR EXPOSURE TESTING





Antimicrobial activity

SURFACE SWAB TESTING

TESTING FOR PHARMA INDUSTRY

- **Product & Raw Material Testing for –**
- Product Identification, Assay & determination of quality, purity as per various Pharmacopoeia standards or as per clients specifications
- Formulation study of the product
- Stability storage & study & Accelerated Shelf Life analysis
- Tablet Disintegration, Dissolution
- Detection of key compounds on GCMS/MS, HPLC
- Detection of Heavy Metals
- Residual solvents

TESTING FOR PHARMA INDUSTRY

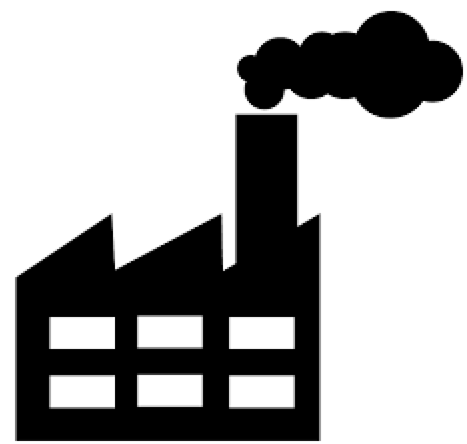
- **Product & Raw Material Testing for –**
- Vitamin Formulations
- **Product & Raw Material Testing for –**
- Microbiological analysis with Modern Facility such as
- ➢ Clean Room with Air Handling Units
- ➢ Respective classified areas
- ➢ Interlocking Door System to avoid cross-contamination & ensuring controlled environment

ENVIRONMENTAL POLLUTION MONITORING & ANALYSIS

- Ambient Air Quality Monitoring Survey as per NAAQS / EPA / Indian standards.
- Source / Stack Emission Monitoring.
- Fugitive / Chemical fumes emission monitoring.
- Performance study for Pollution Control Systems, such as – Scrubber, BAG Filter, Dust Collector & ESP.
- Work zone / Indoor air quality monitoring as per OHSAS / NIOSH / Indian Factories Act, 1948.
- Ambient & Work zone noise level monitoring.

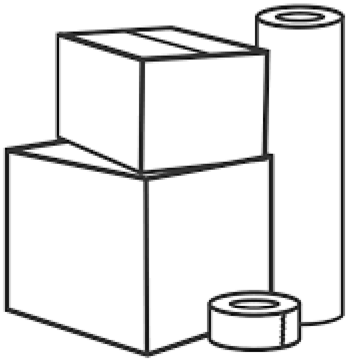
ENVIRONMENTAL POLLUTION MONITORING & ANALYSIS

- Illumination & Ventilation Survey
- Meteorological Survey (Wind Speed, Wind Direction, Temperature, Humidity & Rainfall).
- Measurement of Air Quality Index (AQI).
- Compressed Air Quality Monitoring as per ISO 8573.
- Microbial Count present in Air.
- Heat Stress Index



TESTING OF PACKAGING MATERIAL

- Testing of various Packaging Materials like - Paper, Cardboard, Cans, Preform Bottles, Polythene Film & Pouches (water/oil), etc.
- Transparency testing
- Tensile Strength
- Vibration Test
- Drop Test
- Dart Impact Test
- Migration, Material, Potability
- Stack Load, Ink Adhesion, Product Resistant
- Physical & Mechanical Tests



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TESTING OF PACKAGING MATERIAL

Balance upto 30 kg

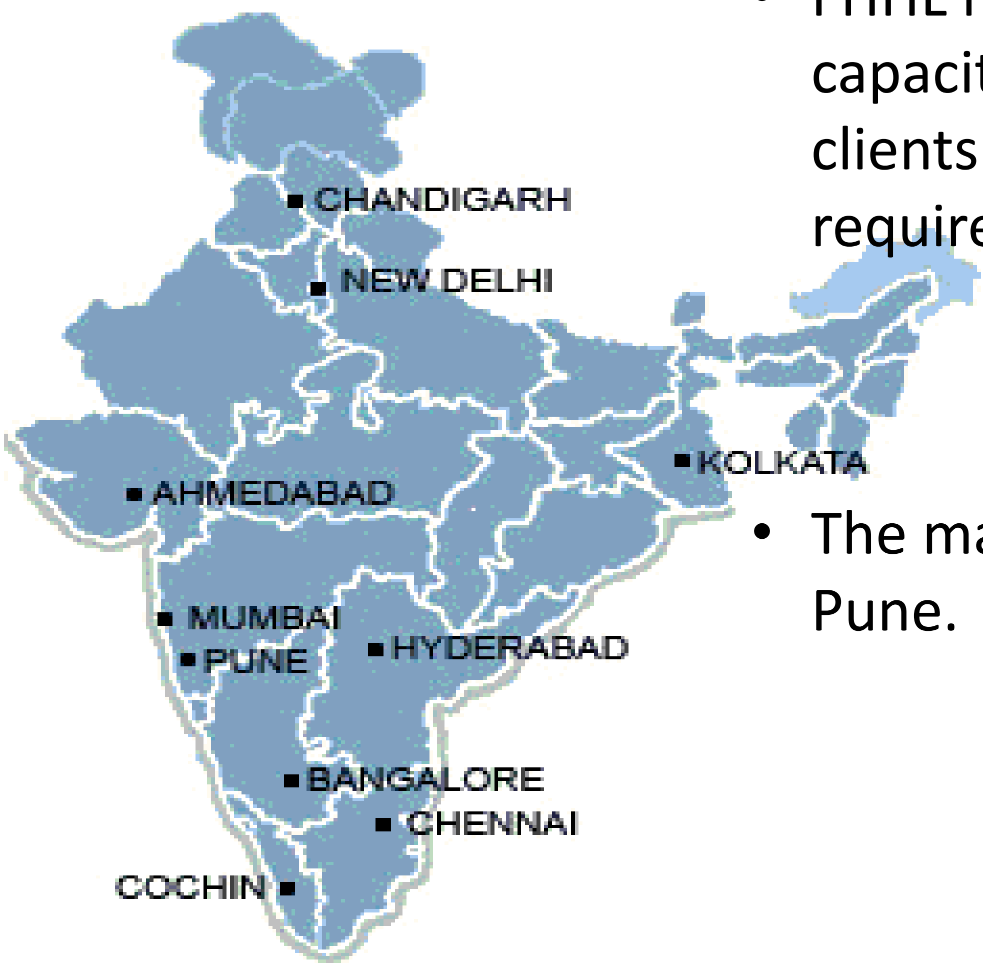
TESTING OF PACKAGING MATERIAL

- Chemical Tests –
  - Global Migration
  - Toxic Heavy Metals
  - Color Migration
  - Overall Migration
  - Primary Amine
  - Phthalates
  - Benzophenone
  - Formaldehyde
  - Poly Chlorinated Biphenyl (PCB)
  - Poly Aromatic Hydrocarbon (PAH)
  - Pentachlorophenol (PCP) determination, etc.

- Microbiological Tests

- **All the above tests mentioned tests can be conducted as per Indian Standard / EN Standard / USFDA / ASTM/ EC Regulation, etc.**

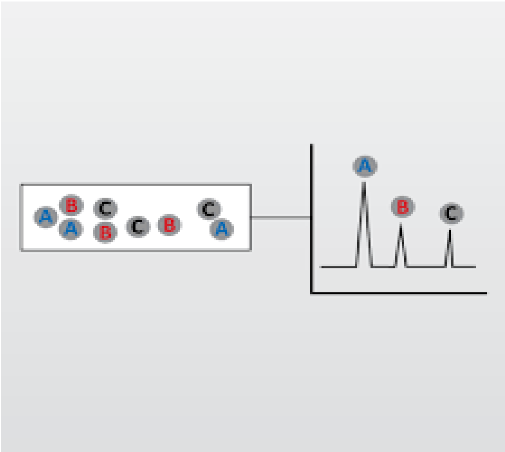
Geographical presence for Service

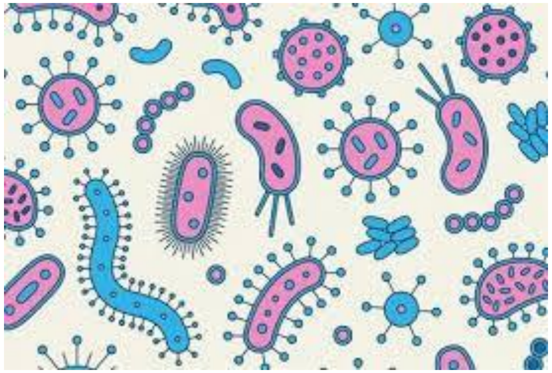


- FHHL has trained manpower and capacity to give PAN India service to clients for all their Testing requirements.

- The main Laboratory is located in Pune.

FACILITY / INFRASTRUCTURE





FACILITY / INFRASTRUCTURE

- **‘Food Hygiene & Health Laboratory’**, has isolated & defined sections like – Chemistry, Microbiology, Environmental & Mechanical Testing, Sample Entry, Sample Storage, Report Formatting & Purchase/Accounts department.
- Ground Floor: Reception area, Sample Entry section & Mechanical testing
- First Floor: Wet Chemistry – Food, Water, Waste Water & Air analysis section
- Second Floor: Individual Instrumentation cabins for – AAS with Graphite Furnace, GC-MS/MS Triple Quad, FTIR, GC with Head Space, HPLC & IC
- Third Floor: Biological Testing Department

FACILITY / INFRASTRUCTURE

- Third floor entirely consists of Microbiology – Clean Room Laboratory with AHU's for different section.
- Isolated Defined areas like – Media Preparation Room, Observation Room, Sterilization Room, De-contamination Room, 6 different Inoculation Rooms with 3 Bio Safety Cabinets & 7 Laminar Air Flows.
- There are 2 change rooms in order to avoid contamination for reaching the Inoculation areas.
- The areas have been well classified into Class 100, Class 10,000 & Class 100,000 with Interlocking system while going through various classified areas.

GC-TRIPLE QUADRUPOLE (MS/MS) MASS SPECTROMETER

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GC-Head Space & GC with FID, TID, ECD

AAS with Graphite Furnace & Hydride Generator

HPLC & Ion Chromatograph

Conference Room

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Microbiology Section – Inoculation Room

Microbiology Section – Incubation / Observation Room

Microbiology Section – Incubation / Observation Room

Microbiology Section – Media Preparation Room

Microbiology Section – Sterilization Room

AHUs for Microbiology Clean Room

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Wet Chemistry – Food Section

Wet Chemistry – Water Section

DG Set Supply for Back-up

SAFETY MEASURES

AUTOMATED FIRE HYDRANT SYSTEM

AUTOMATED Sprinklers & Smoke Alarm SYSTEM

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SAFETY MEASURES

Cylinder Cage

RO SYSTEM

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CONTACT US –

FOOD HYGIENE & HEALTH LABORATORY.

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Email: ***info@fhhl.in***

Website: ***www.fhhl.in***

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THANK YOU !!!