Best Practices in Routine Food Analyses

By reviewing the international best practices in routine food testing globally the following agencies and laboratories were considered.

1 - USA Government Food Safety Information www.FoodSafety.gov
2 - FDA, USA, for Pesticides, Metals, Chemical Contaminants & Natural Toxins http://www.cfsan.fda.gov/~lrd/pestadd.html
3 - FDA, USA, Microbiological Methods, FDA Bacteriological Analytical Manual (BAM) http://www.cfsan.fda.gov/~comm/microbio.html
4 - FDA Food Label Tests, http://www.cfsan.fda.gov/label.html
5 - Codex Alimentarius Commission, (http://www.codexalimentarius.net/web/standard_list.jsp
6 - AOAC, USA, (http://www.aonc.org/oma_revision/toc.htm
2 - ABC Research Corporation, USA http://www.abcr.com/
3 - EU Food Safety Authority, www.elfsa.europa.eu
4 - Food Safety Authority of Ireland www.fsai.ie/
5 - Dubai UAE Food Laboratory, www.intertek-ch.com/newsitetest/services/agri/dubaifoodlab.shtml
6 - OMIC, USA Inc., www.omicusa.com

Examples of the best practices in food testing:


[Analytical Microbiology Lab]
- AEROBIC MESOPHILIC SPORE COUNT
- ANAEROBIC SPORES
- BACILLUS CEREUS
- CLOSTRIDIUM PERFRINGENS
- E. COLI (MPN)
- E. COLI - USP
- E. COLI O157:H7 - ELISA
- ENTEROBACTERIACAE (PETRIFILM / VRBA)
- FECAL COLIFORMS (MPN)
- FECAL STREP
- LACTIC ACID ORGANISMS
- LISTERIA MONOCYTOGENES FDA METHODOLOGY
- LISTERIA SPECIES (USDA)
- LISTERIA SPECIES - ELISA
- LISTERIA-LIKE ORGANISM (MODIFIED USDA METHOD)
- MOLD
- ORGANOLEPTIC DECOMPOSITION
- PCR ECOLI O157:H7
- PCR LISTERIA GENUS
- PCR LISTERIA MONOCYTOGENES
- PCR SALMONELLA
- PLATE COUNT - USP METHOD
- PSEUDOMONAS
- PSEUDOMONAS USP METHOD
- PSYCHROTROPHIC PLATE COUNT
- RAPID CHEK - SALMONELLA
- RAPID CHEK IMMUNOASSAY - LISTERIA SPECIES
- RAPID E.COLI TESTING FOR JUICES - COLICOMPLETE
- SALMONELLA - ELISA
- SALMONELLA - FDA
- SALMONELLA - USDA
- SALMONELLA - USP
- SHIGELLA SPECIES
- STAPHYLOCOCCUS - USP METHOD
- STAPHYLOCOCCUS AUREUS (MPN)
- STAPHYLOCOCCUS AUREUS DNase-Positive (Petrifilm)
- STAPHYLOCOCCUS AUREUS-DIRECT PLATING
- TOTAL ANAEROBIC COUNT
- TOTAL COLIFORMS (MPN)
- TOTAL COLIFORMS / E. COLI PETRIFILM
- TOTAL PLATE COUNT
- TOTAL PLATE COUNT (PETRIFILM)
- YEAST
- YEAST & MOLD - USP
- YEAST AND MOLD
- YEAST AND MOLD PETRIFILM

[Water Lab]
- EXTENDED (MTF) FECAL COLIFORM - SLUDGE -WATER LAB
- FECAL COLIFORMS (MF) - NPW/DW - WATER LAB
- FECAL COLIFORMS (MTF) - NPW - WATER LAB
- FECAL COLIFORMS EXTENDED (MF) - NPW/DW - WATER LAB
- FECAL COLIFORMS EXTENDED (MTF) - NPW - WATER LAB
- FECAL STREP EXTENDED (MTF) - NPW - WATER LAB
- FECAL STREP MTF - NPW - WATER LAB
- TOTAL & FECAL COLIFORMS (MF) - NPW/DW - WATER LAB
- TOTAL & FECAL COLIFORMS (MTF) - NPW - WATER LAB
- TOTAL & FECAL COLIFORMS EXTENDED (MF) - NPW/DW - WATER LAB
- TOTAL & FECAL COLIFORMS EXTENDED (MTF) - NPW - WATER LAB
- TOTAL COLIFORMS / E.COLI - DW - WATER LAB

[Chemistry Lab]
- 2, 4 D (HERBICIDE)
- ACID INSOLUBLE ASH
- ADDED SUBSTANCE CALCULATION
- ADDED WATER
- AFLATOXINS
- ALKALINITY
- ARSENIC
- ASH
- BENZOIC SORBIC ACIDS
- BRIX
- CADMIUM
- CAFFEINE
- CALCIUM IN FOOD
- CALORIES CALCULATION
- CALORIES FROM FAT
- CAPTAN
- Carbamate Pesticides
- Carbamates Pesticides in Nonfatty Food Products
- Carbohydrates Calculation
- Carbonate
- Chloramphenicol
- Chloride
- Chlorinated Pesticide Residues
- Cholesterol
- Collagen
- Conductivity
- Copper
- Crude Fiber
- Cyanide
- Diquat
- Dithiocarbamate Fungicides
- EDTA
- Egg Allergen
- Ethanol
- Ethylene Oxide
- Fat By Acid Hydrolysis
- Fatty Acid Profile - Saturated
- Fatty Acid Profile - Trans
- FD & C Artificial Colors (Blue)
- FD & C Artificial Colors (Red)
- FD & C Artificial Colors (Yellow)
- Fluoride
- Formaldehyde
- Free Fatty Acids
- Gluten
- Glyphosate
- Heavy Filth
- Heavy Metals
- Histamine
- ICAP Scan (Foods)
- Iodine
- Iron
- Lead
- Light Filth
- Loss On Drying
- Magnesium
- Manganese
- Maximum Internal Temperature
- Mercury in Food
- Methyl Mercury (Fish & Shellfish)
- Milk Allergen
- Moisture in Foods
- Moisture/Protein Ratio
- Molybdenum
- Mono- and Poly-unsaturated Fatty Acids Profile
- Net Weight - Dried
- Nickel
- Nitrate in Water
- Nitrate, As NANO3
- Nitrite
- Nutritional Labeling
- Organic Acids
- Organophosphorus Pesticide Residues
2- Dubai UAE Food Laboratory

United Arab Emirates Food and Agricultural Product Testing Laboratory
The labs use standard industry methods such as AOAC, AACC and others. FDA and USDA and related testing services, including nutritional ingredient facts labeling, are available.
Food Resources
Information and Resources related to Food Quality and Testing

- USA FDA
- USA USDA
- Food Safety.gov
- Codex Alimentarius Commission
- Institute of Food Technologists

Food and Agricultural Products Inspected and Tested in Dubai UAE include:
- Frozen Foods, Processed Foods
- Packaged Foods and Beverages
- Mineral Water
- Food and Feed Grains, Feedstuffs
- Animal, Vegetable Oils
- Animal, Vegetable Fats
- Oilseeds, beans and nuts
- Pulses, Copra
- Fertilizers
- Wheat, Flour, Rice, Tea, Coffee, Spices
- Sugar, Molasses, Cotton
- More

Food and beverage testing services include:
- Advanced Laboratory analysis
- Chemical analysis
- Food Ingredients
- US FDA Nutrition Fact Label Testing
- Microbiological Testing
- Trace analysis
- Packaging leaching and trace migration
- Pesticides, Herbicides, Fungicides, other Residues
- Physical Properties
- Nutritional Value and Labeling
- Taints, Flavors and Fragrances analysis
- Water Activity Testing for Food (Aw)

Food and related products tested include:
- Aflatoxin, Mycotoxin Analysis
- Animal Feed
- Beverages
- Biofuels Feedstocks
- Cocoa, Coffee, Tea
- Confectionary, Candy and Chocolate
- Dairy and Milk Products
- Dietary Supplements
- Ethanol
- Grain and Grain Products
- Oilseeds and Oilseed Products
- Fats and Oils, Edible Oils, Palm Oil, Canola Oil, Tallow
- Flour and Baking Products
- Food Additives
- Food Supplements, Vitamins
- Food Colorants and Dyes
- Frozen Foods
- Fusel Oils
- Meat Products
• Melamine Detection and Analysis
• Molasses Products
• Poultry Products
• Seafood Products
• Spices
• Sugar Products
• and more food and beverage products

**Sugar, Candy, Confectionary, Molasses Testing**

Testing and inspection for sugar, candy, molasses and confectionary products:
The laboratory provides global sugar product cargo inspection and sugars food testing services for all sugars, confectionaries and other related products.

-Sugar Product Testing and Inspection Services

1-Sugar & Molasses Analysis

<table>
<thead>
<tr>
<th>Test Methods</th>
<th>Ash (Carbonated, Sulfated)</th>
<th>Brix</th>
<th>Color</th>
<th>Insoluble Matter</th>
<th>Invert Sugar</th>
<th>Invert Sugar</th>
<th>Loss on drying</th>
<th>Moisture</th>
<th>Nitrogen</th>
<th>PH</th>
<th>Polarization of Sugar</th>
<th>Sucrose, Polarimetry before and after Inversion</th>
<th>Sugar Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOAC / ICUMSA</td>
<td>AOAC / ICUMSA</td>
<td></td>
<td>AOAC / ICUMSA</td>
<td>ICUMSA</td>
<td>AOAC (Volumetric)</td>
<td>AOAC (Polarimeter)</td>
<td>ICUMSA</td>
<td>AOAC/ICUMSA</td>
<td>AOAC (Kjeldhal)</td>
<td>ICUMSA</td>
<td>ICUMSA</td>
<td>HPLC</td>
<td></td>
</tr>
</tbody>
</table>

2-Confectionary, Candies and Chocolates (See Cocoa, Chocolate Testing)

| Ash | Artificial Color Additives | Cholesterol | Fiber, Dietary | Milk Solids, Non Fat | Nitrogen / Protein | Fat, total | Microbiology | Moisture | Saturated Fat | Sugar Profile | Sugar, total | Theobromine |
| AOAC | AOAC (HPLC/Spectrophotometer) | GC | AOAC | AOAC | AOAC (Kjeldhal/Combustion) | AOAC | See Microbiology Tests | AOAC (Oven) | GC | AOAC (HPLC) | AOAC (HPLC/Volume/Polar) | AOAC (HPLC) |

**Meat and Poultry Testing**

Global testing and inspection expertise for meat and poultry products

-Meat and Poultry Products Testing

| Ash | Fat | Moisture |
| AOAC, USDA | AOAC, USDA | AOAC, USDA |
Protein/Nitrogen
AOAC, USDA, Kjeldhal
Heavy Metals (as, Pb, etc.)
AOAC, AA
Pesticides
AOAC, USDA
Antibiotics & Drugs
AOAC, HPLC, LC/MS
Salt, Chloride
AOAC, titrimetric
Nitrates and Nitrates
AOAC, USDA

Milk and Dairy Products
Global testing and inspection expertise for milk and dairy products
The food testing laboratories offer analysis for milk, cheese, other dairy products, and products containing ingredients derived from milk, cheese, etc.

<table>
<thead>
<tr>
<th>Milk and Dairy Product Test</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ash &amp; Alkalinity of Ash</td>
<td>AOAC, ADPI</td>
</tr>
<tr>
<td>Dispensability</td>
<td>ADPI</td>
</tr>
<tr>
<td>Fat, milk Fat</td>
<td>AOAC, ADPI</td>
</tr>
<tr>
<td>Lactose</td>
<td>AOAC/HPLC</td>
</tr>
<tr>
<td>Milk Solids, Non-Fat</td>
<td>Calculated from Lactose</td>
</tr>
<tr>
<td>Moisture</td>
<td>AOAC, ADPI</td>
</tr>
<tr>
<td>Minerals</td>
<td>AOAC, ADPI</td>
</tr>
<tr>
<td>Microbiological tests</td>
<td>See Microbiological Tests</td>
</tr>
<tr>
<td>Protein</td>
<td>ADPI (Kjeldhal)</td>
</tr>
<tr>
<td>Protein</td>
<td>ADPI (Combustion)</td>
</tr>
<tr>
<td>Solubility Index</td>
<td>ADPI</td>
</tr>
<tr>
<td>Scorched Particle</td>
<td>ADPI</td>
</tr>
<tr>
<td>Solids (total) in milk</td>
<td>AOAC</td>
</tr>
<tr>
<td>Titratible Acidity</td>
<td>ADPI</td>
</tr>
<tr>
<td>Vitamins</td>
<td>See Vitamins</td>
</tr>
<tr>
<td>Whey Protein Nitrogen</td>
<td>ADPI</td>
</tr>
</tbody>
</table>

Mycotoxin, Aflatoxin Testing
Global testing and inspection expertise for aflatoxin and mycotoxin detection in food
The laboratories test agricultural and food products for the presence of aflatoxins and mycotoxins.

A global lab network is available for these and other food related testing services. Business enquiries only please

<table>
<thead>
<tr>
<th>Aflatoxin, Mycotoxin Analysis</th>
<th>The official AOAC methods used where applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aflatoxin, Total</td>
<td>Elisa, Immuno-affinity</td>
</tr>
<tr>
<td>Aflatoxin, Breakdown of B1, B2, G1, G2</td>
<td>TLC, HPLC</td>
</tr>
<tr>
<td>Citrinin</td>
<td>TLC, HPLC</td>
</tr>
<tr>
<td>Diacetoxyscirpenol</td>
<td>TLC, HPLC</td>
</tr>
<tr>
<td>Fumonisin</td>
<td>HPLC, Elisa</td>
</tr>
<tr>
<td>Ochratoxin</td>
<td>HPLC, Elisa</td>
</tr>
<tr>
<td>T-2</td>
<td>HPLC, Elisa</td>
</tr>
<tr>
<td>Vomitoxin</td>
<td>HPLC, Elisa</td>
</tr>
</tbody>
</table>
Animal Feed Testing

Global testing and inspection expertise for animal feed products. The Laboratory provides inspection and testing of animal feeds, both in the field and in the laboratory.

Services include animal feed analysis, quality, nutritional value, formulation, contamination investigation and more.

<table>
<thead>
<tr>
<th>Animal Feed Tests</th>
<th>Animal Feed Test Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amino Acid</td>
<td>AOAC/HPLC</td>
</tr>
<tr>
<td>Ash</td>
<td>AOAC, Gravimetric</td>
</tr>
<tr>
<td>Calcium</td>
<td>AOAC, Volumetric</td>
</tr>
<tr>
<td>Chloride/Salt</td>
<td>AOAC, Volumetric</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>CALCULATIONS</td>
</tr>
<tr>
<td>Drugs, Antibiotics</td>
<td>AOAC</td>
</tr>
<tr>
<td>Fat (ether extract)</td>
<td>AOAC</td>
</tr>
<tr>
<td>Fat, Acid Hydrolysis</td>
<td>AOAC</td>
</tr>
<tr>
<td>Fiber, Crude</td>
<td>AOAC/AOAC</td>
</tr>
<tr>
<td>Moisture</td>
<td>AOAC</td>
</tr>
<tr>
<td>Minerals (metals)</td>
<td>Atomic Absorption</td>
</tr>
<tr>
<td>Microscopic Analysis</td>
<td>AOAC, Microscopic</td>
</tr>
<tr>
<td>Melamine Detection</td>
<td>FDA</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>AOAC (SPEC.)</td>
</tr>
<tr>
<td>Protein</td>
<td>AOAC, KJELDHAL, Combustion</td>
</tr>
<tr>
<td>Pepsin Digestibility</td>
<td>AOAC, KJELDHAL</td>
</tr>
<tr>
<td>Sugar, Total</td>
<td>AOAC</td>
</tr>
<tr>
<td>TDN, Total Digestible Nutrients</td>
<td>CALCULATIONS</td>
</tr>
<tr>
<td>Calories</td>
<td>CALCULATIONS</td>
</tr>
</tbody>
</table>

Cocoa Testing

Cocoa Laboratory Analysis:
Physical assessment of cocoa.
Chemical assessment of cocoa.
Moisture content.
pH of cocoa beans.
Fat content of beans and nibs.
Entomological assessment of cocoa.
Essential oils testing.
Aflatoxin testing.
Microbiological analysis.
Pesticide residue testing.
Related testing.
FDA compliant analysis.
Nutritional label testing

**Cocoa contains nearly 800 compounds, the laboratory tests them all.**

**Laboratories analyse cocoa for determination of:**

- anti-oxidant phenolics,
- flavonoids,
- theobromine alkaloid,
- n-oleylethanol amine,
- n-linoleoyl-ethanol amine,
- flavanols,
- catechins,
- catechin,
- epicatechin,
- gallatechin,
- epigallatechin,
- leucocyanidins,
- polymeric lecocyanidins,
- anthocyanins,
- L-arabinosidyl cyanidin,
- β-D-galactosidyl cyanidin,
- methyl substituted xanthine alkaloid.

**Cocoa Testing in Processed Foods:**

The laboratories test a wide range of food products that include cocoa in their ingredients. Testing is used to determine ingredients, trace compounds and nutritional value for product development, research and for the Nutritional Value Label of packaged food products for sale to the public.

**The laboratories test cocoa and chocolate:**

- Cocoa Butter,
- Cocoa Liquor,
- Cocoa Powder,
- Chocolate Syrup,
- Alkalized cocoa,
- Various pH values,
- White Chocolates,
- Milk Chocolates,
- Semi-sweet Chocolates
- Chocolate formulated candies and foods,
- Chocolate Confectionery products

**Coffee Testing**

**Coffee Laboratory Testing and Analysis:**

- Physical assessment of coffee.
- Chemical assessment of coffee.
- Entomological assessment of coffee.
Essential oils testing.
Aflatoxin testing.
Microbiological analysis.
Pesticide residue testing.
Related testing.
FDA compliant analysis.
Nutritional label testing.

**Nearly 800 compounds have been identified as affecting coffee aroma, including sulphur compounds:**

Aroma affecting compounds include:
aliphatic compounds,
carbonyl compounds,
sulfur compounds;
alicyclic compounds,
ketones,
aromatic
benzenoid compounds,
phenols,
heterocyclic compounds,
furans,
hydrofurans,
pyrroles,
pyridines,
quinolines,
pyrazines,
quinoxalines,
indoles,
thiophens,
thiophenones,
thiazoles, and
oxazoles.

**Coffee taste, bitterness, sourness, astringency are affected by:**

roasting procedures and various levels of hydrocolloids,
caffeine,
chlorogenic acids,
dicaffeoylquinic acids,
monocaffeoylquinic acids,
trigonelline,
trigonelline degradation,
byproducts including pyridines,
quinic acid,
furfuryl alcohol,
hydroxymethylfurfural,
methyl furan,
caffeic acid,
citric acid,
malic acid,
lactic acid,
pyruvic acid,
acetic acid,
pyrazine,
thiazole,
quinoline,
phenyl pyridine,
peptides,
proteins,
alkycyclic ketones,
arycromatic ketones.

Tea Testing

The tea lab tests include:
Physical assessment of tea and spices.
Chemical assessment of tea and spices.
Entomological assessment of tea and spices.
Essential oil testing.
Aflatoxin testing.
Microbiological analysis.
Pesticide residue testing.
Related testing.
FDA compliant analysis.

The laboratories in Sri Lanka, India, Kenya and the USA analyse both volatile and non-volatile compounds, which directly affect a tea's flavor, taste, color, aroma and smell.
The tea labs test for:
polyphenols,
caffeine,
amino acids,
terpenoids,
alcohols,
carbonyl compounds and other volatiles.

Other tea analyses include:
theaflavin and thearubigin,
along with total color,
percent brightness,
stringency,
bitterness and
sweetness.

Grains and Oilseeds Testing

Grain and Oilseed Tests:
1000 Kernel Weight ITS
Acid Insoluble Ash AOAC/AOCS
Acidity (Fat) AACC
Acidity (Titrable) AACC/ITS
Aflatoxin See Mycotoxins
Ammoniacal Nitrogen AOAC (Kjeldhal)
Ash  AOCS/AOAC/AACC/ISO
Admixture  AOCS/USDA
Bulk density  USDA
Calcium  AOAC/ITS
Chlorophyll (Canola)  AOCS (SPECT)
Calories  CALCULATION
Carbohydrates  CALCULATION
Chlorides  AACC
Cresol Red Test  ITS/ISO
Crude Fiber  AOAC/AOAC
Density  ITS
Dockage  USDA
Erucic Acid (Canola)  AOAC/AACC
Elements by AA  AOAC/AACC
Ergot  USDA/AACC
Ether Extraction  AOCs/AOAC
Ethylene Dibromide  GC/ECD
Ewer Starch  ITS
Fat (Oil) Content by NIR  USDA
Fat (Oil) Content  AOCs/AOAC
Fat (Acid Hydrolysis)  AOAC
Fat (oilseeds)  AOCS/FOSFA
Fiber  AOCS/FOSFA
Falling Number  AACC
Foreign Matter  USDA
Free Fatty Acid  AOCs
Fumonisin  See Mycotoxins
Germination  ITS
Glucosinolate  AOCs/USDA
Gluten, wet  AACC
Gluten, wet & dry  AACC
Gossypol, Total  HPLC
Grade  USDA
Granulation  AOAC
Hard Vitreous Kernels (DHV)  USDA
Heavy Metals by AA  AOCs
Hexane Content  AOCs (HPLC)
Impurities  See Foreign Matters
Infestation  USDA/Visual
Insecticides  See Pesticides
Iron  AACC (AA)
Karnal Bunt  USDA
KOH Solubility  AOCs (Modified)
Lead Content  GFAA
Metals by AA  See Elements
Methyl Bromide  GC, ECD
Moisture Dickey John  USDA
Moisture by Oven  AOCs, AACC, AOAC, ISO
Moisture by Vac. Oven  CRA
Milling and Baking  See Flour
Mold Count  See Microbiology
Mycotoxins  See Mycotoxins
Nitrogen Solubility  AOCs
Testing services include a wide range of edible oils, vegetable oils and animal fats and oils. Products tested include tallow, palm oil, oilseed, cooking oils, groundnut oils, mustard oil, safflower oil, sesame oil, soya oil, sunflower oil, other vegetable oils and more.

### Fats and Oils tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetyl &amp; Hydroxyl Value</td>
<td>Saponification</td>
</tr>
<tr>
<td>Acid Value</td>
<td>Titration</td>
</tr>
<tr>
<td>Acetone Insoluble Matter</td>
<td>Gravimetric</td>
</tr>
<tr>
<td>Active Oxygen Method (AOM)</td>
<td>Titration 8 hrs</td>
</tr>
<tr>
<td>Active Oxygen Method (AOM)</td>
<td>20, 60, 80 hrs +</td>
</tr>
<tr>
<td>Aldehyde Profiles</td>
<td>GC/MS</td>
</tr>
<tr>
<td>Aliphatic Alcohols</td>
<td>GC/FID</td>
</tr>
<tr>
<td>Anisidine Value</td>
<td>AOCS</td>
</tr>
<tr>
<td>Antioxidants (BHA, BHT etc)</td>
<td>HPLC</td>
</tr>
<tr>
<td>Appearance</td>
<td>Visual</td>
</tr>
<tr>
<td>Ash</td>
<td>AOCS/ISO</td>
</tr>
<tr>
<td>Aflatoxin, Total</td>
<td>Fluorometric</td>
</tr>
<tr>
<td>Aflatoxin, (B1, B1, G1, G2)</td>
<td>T.L.C</td>
</tr>
<tr>
<td>Aldehyde Profile</td>
<td>GC/MS</td>
</tr>
</tbody>
</table>
Aliphatic Alcohols  GC/MS  
Alcohols  GC/MS  
Bleaching Test  Gardner Smith  
Boemer Number  Melting Point  
Break Test  Gravimetric  
Chemical Contaminants (e.g. Benzene, Styrene, Phenols)  HPLC  
Chlorophyll  AOCs, FOSFA  
Cloud Point  AOCs  
Cold Test  AOCs  
Color Gardner, FAC  AOCs  
Color, Lovibond (raw)  AOCs  
Color Bleach  Gardner Smith  
Color refined & bleached  AOCs  
Copper  AA Flame / GFAA  
Confirmation of Components detected by other methods  GC/MS  
Congeal Point  AOCs  
Dioxins  GC/MS  
Erucic Acid  AOCs/ISO/ GC  
Esters  GC  
Extractable Organics  GC/MS  
Fat Stability  See Active Oxygen Method  
Fatty Acid, Total & Oxidized  Saponification  
Fatty Acid Composition  AOCs/ISO/ (GC FID)  
(including Transfat)  LC/MS  
Fatty Alcohol Profile  GC/FID  
Flash Point  AOCs/FOSFA  
Flavor Profiles  GC/MS  
Fragrance Profiles  GC/MS  
Free Fatty Acids  AOCs/ISO (Titration)  
Fry Study, Frying Study  Color, Total Polars, Aldehydes, PV, FFA, FAP  
Glycerin  Titration  
Glycerin and Glycols  HPLC  
Gossypol (in cotton seed oil)  HPLC  
Halphen Test  AOCs  
Hexane Residues  GC Headspace  
Hydrocarbon Profile  GC FID  
Hydroxyl & Acetyl Value  AOCs  
Insoluble Impurities  AOCs/ISO  
Iodine Value  AOCs/ISO (WIJS)  
Iron  AA/GFAA  
Kries Test, Rancidity Index  B.S.  
Melting Point (Capillary)  AOCs/ISO  
Melting Point, Wiley  AOCs  
Melting Point, Slip  AOCs/ISO  
Metals, Trace, Heavy metals  AA/GFAA  
Moisture and Volatiles  Oven / Hotplate  
Moisture by Karl Fisher  AOCs/ISO  
Moisture by Distillation  AOCs/ISO  
Mercury  AA-Cold Vapor  
Monoglycerides, Diglycerides & Triglycerides  GC/FID
MTBE  GC/FID
Mucilage  Spectro
Neutral Oil & Loss  AOCS
Nitrogen  KJELDHAL
Odor  Smell
Oleic Acid  AOCS/ISO (GC-FID)
Organic Acid Profile  HPLC
PH  ITS/AOCS/ISO
Phthalates  HPLC
Polar Compound  GC
Peroxide Value  AOCS/ISO
Phosphorous  Spectro
Pesticides, Organochlorine  GC
Pesticides, Organophosphorous  GC
Pesticides, PCBS  GC
Polyaromatic Hydrocarbons  GC/MS
Polyethylene  AOCS/ISO
Polysorbates  HPLC
Priority Polluants  GC/MS
Qualitative Test for Fish Oils  AOCS
Radioactivity  ITS
Rancidity Index (Kries Test)  B.S.
Rate of Filtration  ITS
Refining Loss  AOCS
Refractive Index  AOCS/ASTM
Saponification Value  AOCS/ISO
Saponification Color  AOCS
Saponification matter, total  Calculated from MIU
Smoke Point  AOCS/BS
Sorbic and Benzoic Acids  HPLC
Soap Content  FOSFA
Soap in Oil  AOCS
Solubility in Alcohol  Alcohol/Caster oil Mix
Specific Gravity/Mass per volume  AOCS/ISO
Sulphur  ASTM
Squalene  HPLC
Specific Extinction  UV/Visible Spec.
Sterols  GC/FID
Stigmadienes  GC/FID
Solid Fat Content  AOCS/ISO
Solid Fat Index  AOCS
Trace Element  (AA-GFAA
Thermal Heating Fluids (THF, Dowtherm)  HPLC
Titer  AOCS/ISO
Triglycerides Profile  HPLC
(Plus mono & Diglycerides)  HPLC
Tocopherol (plus tocotrienols)  HPLC
Trans Isomers  GC
Thiocyanogen Value  AOCS
Unsaponifiable matter  AOCS/ISO
Unsaponifiable profile  GC/MS
Water by distillation  AOCS/ISO
Waxes  GC/FID

Flour and Bake Testing

- Enzymes Analysis  AACC Methods are used where applicable
  Alpha Amylase Activity
  Diastatic Activity (Maltose)
  Proteolytic Activity (Spectrometric)
  Urease activity

-Microbiology and Mycotoxin Tests  AOAC methods are used where applicable
See Microbiology and Mycotoxins

-Monographs of Food Chemicals
Food Chemical CODEX Standards

Ascorbic Acid
Azodicarbonamide
Calcium Propionate
Calcium Pyrophosphate
Calcium Triphosphate
Citric Acid
Sodium Bicarbonate

-Amino Acids  AOAC

Amino acid profile including tryptophane
Amino acid profile excluding tryptophane
Cystine and methionine
Individual Components of Amino Acid Profile:  AOAC
Alanine
Arginine
Aspartic and acid
Cystine
Glutamic acid
Glycine
Histidine
Leucine
Lysine
Methionine
Phenylalanine
Proline
Serine
Threonine
Tryptophane
Tyrosine
Valine

-Physical Tests  AACC Methods are used where applicable
Amylograph
Amylograph-Modified
Alveograph
Absorption
Density
Extensiograph
Experimental Milling (on Wheat)
Extraneous Matter
Farinograph
Falling Number
Gluten - Wet
Gluten - Wet and Dry
Gluten Index
Granulation
Mixograph
PH on 10% solution
Sedimentation
Sanitation
Stability
Viscosity (Mac Michael)
Viscosity (Brookfield)
W-Value
Baking Tests AACC Methods are used where applicable
Sponge and Dough Bake Test
Pup Bake Test
Cookie Bake Test

Food and Nutrition Supplement Testing

Vitamins Testing:
- AOAC, LC/MS, HPLC, other methods
- Biotin, Choline, Chloride
- Folic Acid, Inosital, Niacin
- Pantothenic Acid
- Vitamin A, Vitamin B2, Thiamin
- Vitamin B2, Riboflavin, Vitamin B6, Pridoxine, Vitamin B12, Cynocabalamin
- Vitamin C, Ascorbic acid
- Vitamin D, Vitamin E

Meat and Poultry Testing

Meat and Poultry Products Testing

Ash AOAC, USDA
Fat AOAC, USDA
Moisture AOAC, USDA
Protein/Nitrogen AOAC, USDA, Kjeldhal
Heavy Metals (as, Pb, etc) AOAC, AA
Pesticides AOAC, USDA
Antibiotics & Drugs AOAC, HPLC, LC/MS
Salt, Chloride AOAC, titrimetric
Spice Testing Laboratory

Spice Testing conforms to the American Spice Trade Association (ASTA), AOAC and other industry standards. Spice tests available include:

- Foreign Matter %
- Ash %
- Purity % (depending upon spice product)
- Acid Insoluble Ash
- Moisture Content, Water %
- Heavy Metals Content: lead, cadmium, mercury
- Pesticides Content, consistent with good agricultural practice
- Microbiology: Salmonella, Yeast and Mold
- Infestation free from visible to the naked eye
- Aflatoxins
- Mycotoxins
- Alcohol extract
- Ether Extract
- Sieve Analysis
- Volatile Oils
- Illegal Dyes, including Sudan Red and Para Red Dyes

Spices tested include:

- Allspice
- Basil
- Capsicums
- Celery Seed
- Chilis
- Cinnamon Cloves
- Coriander
- Cumin Seed
- Dehydrated Garlic
- Dehydrated Onion
- Dill Fennel Seed
- Ginger
- Mace
- Mustard Seed
- Nutmeg
- Oregano
- Paprika
- Pepper
- Sage
- Sesame Seed
- Spice Extractives
- Thyme
- Turmeric
- Others

Food Agri. Accreditations, Resources:

- AACC
**Water Activity Laboratory:**

The food laboratory uses state-of-the-art laboratory instrumentation for water activity analysis, with accuracy to ± 0.003 Aw in less than 5 minutes.

**Food testing to quality standards:**

The laboratory uses test methods such as AOCS, AOAC, USP, AACC. The Food Chemical Codex, FTI, USDA, FDA and other recognized industry and government standards. The lab participates in various cross-check testing programs.

The Water Activity lab provides measurements to help predict food texture, bacteria, yeast and mold growth from microbes such as Pseudomonas, Escherichia, Proteus, Salmonella, *C. botulinum*, Candida, Micrococcus, micotoxigenic penicillia, *Aspergillus chevalieri*, *Saccharomyces rouxii*, monascus bisporus and many others.

**FDA Food Label Tests**, [http://www.cfsan.fda.gov/label.html](http://www.cfsan.fda.gov/label.html)

**FDA Nutrition Facts Label Design and Nutrition Facts Label Testing**

The laboratory helps companies meet FDA, USDA and other related food label compliance. The New Orleans USA laboratory analyzes food products for 14 nutritional elements, mandatory components required by the FDA for labeling purposes.

**Food and Beverage Testing includes:**

- Food Ingredient Analysis
- Trace Analysis
- Beverage Nutritional Value
- Food Nutritional Value
- Pet Food Nutritional Value
- Baked Goods Nutritional Value
- Health Food Nutritional Value
- Food Testing Services
- Mercury Content in Fish
- Pesticide Residue in Food
- Trace Residue Testing
- Food Packaging Tests
Mandatory FDA food nutritional label information:
- Total Fat, Saturated Fat
- Cholesterol
- Sodium
- Vitamin A, Vitamin C
- Calcium
- Total Carbohydrates
- Trans Fat
- Dietary Fiber
- Sugars
- Protein
- Iron
- Total Calories, Calories from Fat
*calculated from moisture, ash, protein and fat.
**Trans Fat listing is voluntary until January 1, 2006 Ref: FDA 68FR414.

Voluntary components declared on the label:
- Calories From Saturated Fat, Monounsaturated Fat
- Soluble Fiber, Insoluble Fiber, Total Dietary Fiber
- Other Carbohydrates
- Polyunsaturated Fat
- Trans-fatty Acids
- Sugar Alcohols (mannitol, sorbitol)

Other vitamins and minerals tested:
- Vitamin D, Vitamin E (low level), Niacin, Folic Acid, Vitamin B12
- Phosphorus, Iodine, Potassium
- Thiamine B1, Riboflavin B2, Biotin, Vitamin B6
- Pantothenic Acid, Magnesium, Copper, Zinc
- The lab offers additional testing for trace metals, pesticides and other compounds.

Trace Residue Testing

Global food and agricultural product testing and inspection expertise for pesticides, fungicides and herbicides and trace residue analysis.

Chlorinated Pesticide Screening
- Aldrin
- Alpha-BHC
- Beta -BHC
- Delta-BHC
- Dichloran
- Dicofol
- Dieldrin
- Dioxin, SW 846 GC/MS/HS
- Endosulfan -I
- Methoxy Chlor
- Mirex
- Oxadiazon
- Permethrin
- Endosulfan -II
- Endosulfan -Sulfate
- Endrin
Folpet
Heptachlor
Heptachlor/Epoxide
Hexachlorobenzene
PCBS
Propyzamide
Quintazone
Technazene
Tetradifon
Toxaphene
Vinclozolin
Gamma-BHC (LINDANE)
Captafol
Captan
Chlordane
Chlorothalonil
Cypermethrin
P,P-DDD
P,P-DDE
P,P-DDT

Organophosphate Pesticide Screening
Acephate
Azinophos-methyl
Chlorfeninphos
Chlorpyrifos- ethyl
Chopyrigos-Ethyl
Chlorpyrigos-Methyl
(Dursban, Lorsbon)
Coumaphos
Demeton-S
Diazinon
Dichlorofenthion
Dichlorovos
Dimethoate
Disulfoton
EPN
Ethion
Fenthion
Fenitrothion
Fonofos
Malathion
Methamidophos
Methodidathion
Mevinphos
Omethoate
Parathion Ethyl
Parathion Methyl
Phosolane
Phosmet
Primiphos-Methyl
Propetamphos
Prothiopos
Ronnel
Thimet
Trithion

**Chlorinated, Organophosphate Pesticides Screening**
Includes compound list from both the Chlorinated and Organophosphate Pesticide listed above

**Triazine and Chloracetamide Herbicides Screening**
Alachlor
Atrazine
Cyanazine
Metochlor
Simazine

**Chlorophenoxy Acid Herbicides screening**
2, 4, 5 -D
2, 4, 5 -T
2, 4, 5 -TP (SILVEX)
2,4 -DB
2, 4 - DP
Dimethoate
MCPA
DICAMBA
PCPP
N- METHYL CARBAMATES
3 Hydroxy Carboguran
Aldicarb (Temik)
Aldicarb Sulfone
Aldicarb Sulfoxide
Bendio Carb
Carbaryl (Sevin)
Carbofuran
Promecarb
Ethiofen Carb
Propoxur (Baygon)
Methio Carb
Methomyl
Oxamyl

Volatile Fumigants
Carbon Tetrachloride
Chloroform
Ethylene Dibromide
Methyl Bromide
Phosphotoxin (phosphide)
Trichloroethylene

Other Pesticides, Herbicides and Fungicides Screening
Pesticides regulated under the Guidelines of Codex Alimentarius, WHO, FAO.

**Trace Metals Analysis**
*Trace metals detection, identification and quantification*
Laboratories provide trace metals analysis for detection, identification and quantification of trace metals content in a diverse range of materials and samples. Quantitative and semi quantitative analysis are available to ppm, ppb and ppt detection levels depending upon the sample-matrix and technique used.

**Trace metal analysis capabilities:**
- Trace metal analysis techniques
- Trace Analysis Homepage
- Chemical Composition
- Trace metal testing overview
- Raw material testing
- Product specifications
- Assay, purity analysis
- Trace analysis
- Trace level detection
- QC screening, troubleshooting
- Identification of unknowns
- Molecular species
- More

**Trace metal compounds and metallic species detected and characterized include:**
- Toxic Materials
- Alkali Earths, Alkali Metals
- Transition Metals
- Precious Metals

**Specific trace metal elements detected include:**
- Aluminum, Antimony, Arsenic
- Barium, Beryllium, Boron
- Cadmium, Calcium, Cobalt, Copper
- Chromium
- Hexavalent Chromium
- Gold
- Iron
- Lead (Pb), Lithium
- Magnesium, Manganese
- Mercury
- Molybdenum
- Nickel
- Palladium, Potassium, Platinum
- Selenium, Silicon, Silver, Sodium
- Tin, Titanium, Thallium
- Vanadium
- Zinc

**Trace Metal Analysis Techniques**

**Trace metal analysis laboratory techniques include:**
- ICP, Inductively Coupled Plasma Spectrometry
- ICP/OES: Optical Emission Spectrometry
- ICP/MS: Mass Spectrometry, ICP-MS
- GC/ICP/MS:
  - Gas Chromatography Inductively Coupled Plasma Mass Spectrometry
- XRF: X-Ray Fluorescence Spectrometry
- AAS: Atomic Absorption Spectrometry, AA
- Graphite Furnace Atomic Absorption Spectroscopy (GFAAS)
- Automated combustion techniques
- Pyrolysis, Infra-red detectors
- Fluorescence detectors
- Chemiluminescence detectors
- Cold vapor atomic absorption, AAS

**Chemical Composition Analysis**

*Compositional Chemical Analysis for Materials used in Industry, Research, Commerce and more*

**Compositional testing for:**
- Chemical Analysis
- Materials Analysis
- Process Chemistry
- Petroleum Products
- Consumer Products
- Food
- Agricultural Products
- Pharmaceutical Research
- Contamination Detection
- Corrosion Fatigue Testing
- and more

**Composition expertise:**
- Failure Analysis
- Laboratory capabilities
- Materials Analysis laboratories
- Materials Analysis Expertise
- Product Testing
- Technology Centre laboratories
- Trace Analysis
- Elemental Analysis
- Chemical Formulation, de-formulation
- Global Laboratory techniques
- RoHS/WEEE services, and
- More.

**Trace Element Analysis**

**Elemental analysis solutions:**
- Trace analysis detection
- Ultra-trace analysis
- Raw material testing
- Chemical specifications
- Assay and purity analysis
- Contamination analysis
- QC screening, Troubleshooting
- Identification of unknowns
- Elemental Speciation
- Metallurgical Applications

**Trace element testing laboratory techniques:**
• ICP: Inductively Coupled Plasma Spectrometry
• ICP/OES: Optical Emission Spectrometry,
• ICP/MS: Mass Spectrometry
• GC/ICP/MS: Gas Chromatography Inductively Coupled Plasma Mass Spectrometry
• XRF: X-Ray Fluorescence Spectrometry
• AAS: Atomic Absorption Spectrometry
• Automated combustion techniques
• Pyrolysis, Infra red detectors
• Thermal conductivity detectors
• Fluorescence detectors
• Chemiluminescence detectors
Cold vapour atomic absorption, AAS.

Trace Elements, elemental compounds and species detected and characterized include:

• Alkali Earths, Alkali Metals
• Aluminium, Arsenic
• Boron, Bromine
• Cadmium
• Carbon, Chloride
• Chromium, Chromium Six
• Copper
• Fluorine, Fluoride
• Gold, Halogens, Hydrogen
• Iron, Iodine
• Lead (Pb), Lithium
• Mercury, Mercury Species
• Trace Metals Detection and Analysis
• Nitrogen, Nitrogen Species
• Nickel
• Non-metals
• Oxygen, Phosphorous, Potassium
• Precious Metals
• Silicon, Silver
• Sulfur, Sulfur Species
• Titanium
• Vanadium
• Zinc and more

OMIC USA Inc.

Microbiological Testing

OMIC USA’s microbiological analysis services include the following standard offerings.

  o Aerobic Plate Count (APC) by Petri Film
  o Appearance (Taste and Odor)
  o Aspergillus flavus, by Petri Film
  o Bacillus Cereus
  o Campylobacter
Nutritional Quality Testing
OMIC USA’s nutritional analysis services include the following standard offerings. Please contact us to discuss your specific needs.

**Proximates**
- Ash, Muffle Furnace
- Fat, Acid Hydrolysis
- Protein (Kjeldahl)
- Calories (Kcal)
- Sodium
- Moisture oven
- Carbohydrates (Energy)

**Vitamins**
- Folic Acid
- Niacin
- Thiamine
- Vitamin A retinol (Carotene)
- Vitamin B1 (Thiamine)
- Vitamin B12 (Cobalamin)
- Vitamin B2 (Riboflavin)
- Vitamin B5 (Pantothenic acid)
- Vitamin B6 (Pyridoxime)
- Vitamin C
- Vitamin D (total)
- Vitamin E

**Food Additives and Preservatives**
- Benzoic Acid (Sodium Benzoate)
• Nitrate
• Salt (Measured As Chloride)
• Sorbic Acid (Potassium Sorbate)
• Sulfites

**Miscellaneous**
• BHA/BHT
• Carbohydrates (Total)
• Carbon Disulfide
• Carbon Tetrachloride
• Cholesterol
• Crude Protein
• Disintegration
• Fat, Ether Extraction
• Fiber, Acid Detergent
• Fiber, Crude
• Fiber, Neutral Detergent
• Fiber, Total Dietary (TDF)
• Inorganic Bromide
• Nutritional Labeling
• pH
• Protein (Combustion)
• Solids (In Ice Cream)
• Starch
• Starch Damage
• Sulphur Dioxide
• TBHQ
• Urease Activity

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**Summary of the Most Important International Best Practices in Food Testing**
(By type of Analysis)

**Microbiological Analyses**

Aerobic Plate Count (APC)
Aerobic Spore Forming Bacteria
Aflatoxin (by HPLC/MS)
Alicyclobacillus (acido-thermophilic)
Anaerobic Plate Count
Anaerobic Spore Forming Bacteria
Bacillus cereus
Bacteria ID (One Colony)
Clostridium botulinum (PCR; 2 day TAT)
Clostridium perfringens
Coliform, MPN or Petrifilm
Coliforms + E. coli (MPN or Petrifilm)
Dicumarol
E. coli, MPN or Petrifilm
E. coli, O157:H7 (presumptive)
E. coli, O157:H7 (confirmed by culture)
E. coli, O157:H7 (PCR; 1 day TAT)
Enterobacter
Guaiacol (Alicyclobacillus metabolite)
Halophilic Organisms
Howard Mold Count
Lactic Acid Bacteria
Lactobacillus Count
Lipolytic Organisms
Listeria (FDA/BAM culture)
Listeria (USDA culture)
Listeria (PCR; 1-2 days TAT)
Listeria monocytogenes (PCR; 1-2 days)
Mesophilic Anaerobes
Micro Profile A (E.col 0157/List./Salm.)
Micro Profile B (APC, Y & M)
Micro Profile C (APC, Coliform, E. coli)
Micro Profile G (Profile C, Salmonella, Staph., Y&M)
Micro Profile X (Profiles A & G)
Osmophilic Organisms
Patulin
Psuedomonas
Psychrotropic Organisms
Salmonella (USDA culture)
Salmonella (USDA culture, 375 g/honey)
Salmonella (PCR; 1-2 days TAT)
Shelf Life Study
Shigella (presumptive)
Staph. A Enterotoxin
Staphylococcus (presumptive)
Staph., Coag (+) (confirmation)
Yeast & Mold
Yeast & Mold, Osmophilic

Nutritional Analyses

Alcohol (by GC)
Ammonia
Anisidine Value
Arsenic
Ash, acid insoluble
Ash, muffle furnace
Benzoic acid
BHA / BHT
Bostwick Consistency (xsec @ y°F)
Brix (via refractometer)
Bromide, Inorganic
Cadmium
Caffeine
Calcium
Calories (Proximate)
Carbohydrates
Chloro-1,2-propanediol (3-MCPD)
Cholesterol
Copper
Cyanide, Total
Diastase (in honey)
Essential Oils
Ethoxyquin
Ethylene Oxide
Fat, acid hydrolysis
Fat, Babcock or butterfat
Fat, ether extract
Fatty Acid Profile (C3-C8)
Fatty Acid Profile (C8-C18)
Fatty Acid Profile (Omega-3)
Fatty Acid Profile (Trans)
FD&C Color Red # 40
FDA Basic Nutrition Label (by analysis)
FDA Nutr. Label + Folate
FDA Nutr. Label + Mono & PUFA Fat
FDA Nutr. Label + Potassium
FDA Nutr. Label + Vitamin E
FDA Nutr. Label + B1, B2, B3, Folate
Fiber, acid detergent
Fiber, crude
Fiber, total dietary (TDF)
Fiber, total dietary insoluble/soluble
Folic Acid (Folate)
Formic Acid (in honey)
Free Fatty Acids
Glycoalkaloids (in potatoes)
Granulation (Mesh Size)
Hydroxydecanoic acid (10-HDA)
Hydroxymethylfurfural (HMF), in Honey
Insoluble Solids
Iodine Number
Iron
Lead
Limonin (in citrus juice)
Lycopene
Magnesium
Mercury
Methyl Anthranilate (in grape essence)
Methylene Chloride (residual)
Moisture, forced air oven
Moisture, toluene
Moisture, vacuum oven
Niacin
Nitrate
Nitrite
Nitrogen, Kjeldahl
Nonfat Solids
Nutrition Profile, Basic (without label)
Nutrition Profile, Minimum (Prox. + Na)
Organic Acids Profile
Peroxide Value
pH
Phosphorus
Polysorbates
Polyunsaturated Fatty Acids, cis cis
Potassium
Propylene Oxide (MDL<1 ppm)
Propylene Oxide (MDL <50 ppm)
Protein
Redox Potential
Riboflavin
Salt (measured as chloride)
Saturated/Unsaturated Fatty Acids
Scoville Heat Value
Shelf Life (headspace/volatiles anal.)
Sodium
Solids
Sorbic Acid (K Sorbate)
Sorbitol
Sugar Profile
Sulfite, modified Monier-Williams (Sulfur Dioxide)
TBHQ (tert-Butylhydroquinone)
Theobromine
Thiamin
Titratable Acidity
Tocopherol (Vitamin E)
UF Profile (in honey)
Vanilla Extract Profile (AOAC 990.25)
Vitamin A, Retinol & Carotene
Vitamin C
Volatile Oils
Water Activity
Water-Phase Salt
Zinc

**Pesticide Residue Analyses**

Abamectin (Avermectin) (Agrimek)
Acephate (Orthene)
Acetamiprid (Intruder)
Acetochlor (Harness)
Acifluorfen (Blazer)
Acrinathrin (Rufast)
Agritox (Trichloronate)
Alachlor (Lasso)
Aldicarb (Temik), and metabolites
Aldrin
Allethrin
Allidochlor (Randox)
Amethrin
Amitraz (Mitac)
Amitrol
Anilazine (Dyrene)
Apple / Pear Pesticide Profile
Aramite
Arochlor 1016 - 1268 (PCB’s)
Aspon
Asulam
Atrazine
Azinphos-Methyl (Guthion), & O analog
Azoxystrobin (Quadris)
Banrot (Thiophanate-methyl+Etridiazole)
Basic Pesticide Profile
Benalaxyl (Galben)
Bendiocarb (Dycarb)
Benfluralin (Balan)
Benomyl (Benlate)
Benoxacor
Bensulide (Prefar)
Bentazon (Basagran)
BHC (alpha, beta, delta, gamma isomers)
Bifenazate (Acramite)
Bifenox (Modown)
Bifenthrin (Capture)
Binapacryl
Bitetanol (Baycor)
Boscalid (Endura)
Bromacil
Bromadiolone (Hawk) (Maki)
Bromophos
Bromophos Ethyl
Bromopropylate (Acarol)
Bromoxynil (Buctril)
Bromoconazole
Bronate (Bromoxynil + MCPA)
Butachlor (Machete)
Butralin (Amex)
Butyleate (Sutan)
Cadusafos (Rugby)
Captol (Difolatan)
Captan
Carbamate Pesticide Profile
Carbaryl (Sevin)
Carbendazim (MBC)
Carbofuran (Furadan), and metabolites
Carbophenothion (Trithion)
Carbophenothion Methyl (Methyl Trithion)
Carboxin (Vitavax)
Carfentrazone-ethyl (Aim) (Shark)
Chloramphenicol, by ELISA or HPLC/MS
Chlordane
Chlordecone
Chlordimeform (Galecron)
Chlorfenapyr (Alert) (Pirate)
Chlorfenvinphos (CFV)
Chlorflurenol-methyl (Maintain)
Chlorimuron-ethyl (Classic)
Chlorinated Hydrocarbons (EPA 8120)
Chlormequat
Chlornitrofen (CNP)
Chlorobenzilate
Chloroneb (Terraneb)
Chloropicrin (Chlor-O-Pic)
Chlorothalonil (Bravo)
Chlorpropham (CIPC)
Chlorpyrifos (Lorsban) (Dursban)
Chlorpyrifos Methyl
Chlorsulfuron (Glean)
Chlorthion
Chlorthiophos
Cloethodim (Select)
Clofentezine (Apollo)
Cloazine (Command)
Clopyralid (Stinger)
Cloransulam-methyl (FirstRate)
Columbia Pesticide Profile
Coumaphos
Crossbow (Triclopyr + 2,4-D)
Crotamiton
Curitail (Clopyralid + 2,4-D)
Curtail M (Clopyralid + MCPA)
Cyanazine (Bladex)
Cyanophos (Cyanox)
Cycloate (Ro-Neet)
Cyfluthrin (Baythroid)
Cyhexatin (Plictran)
Cymoxanil (Curzate)
Cypermethrin (Ammo) (Barricade)
Cyprazine
Cyprodinil (Vangard)
Cyromazine (Trigard)
D, 2,4 (2,4-D)
Dacthal (Chlorthal-dimethyl)
Dalapon
Daminozide (Alar)
DB, 2,4 (2,4-DB)
DDT, and metabolites DDD, DDE
DEF (Tribufos)
Deltamethrin (Decis)
Demeton S (Systox)
Desmedipham (Betanex) (Betanal AM)
Diallate (DATC)
Diazinon, and oxygen analog Diazoxon
Dibromochloropropane (Fumazone)
Dicamba (Banvel)
Dichlobenil (Casoron)
Dichlofenthion (Nemacide)
Dichlofluanid (Euparen)
Dichloropropene-1,3 (Telone)
Dichlorvos (DDVP) (Vapona)
Diclobutrazol (Vigil)
Diclofop-methyl (Hoelon)
Dicloran (Botran) (DCNA)
Dicofol (Kelthane)
Dicrotophos (Bidrin)
Dieldrin
Diethylamyl ethyl (Antor)
Diethofencarb
Difenoconazole (Dividend)
Diflubenzuron (Dimilin)
Diisopropyl-naphthalene-2,6 (DIPN)
Dilan (Prolan)
Dimethachlor
Dimethametryn (Dimepax)
Dimethanamid (Frontier)
Dimethoate (Cygon)
Dimethomorph (Acrobat)
Dimethylnaphthalene-1,4 (1,4-Sight)(DMN)
Diniconazole (Spotless)
Dinitroaniline Herbicide Profile
Dinocap (Crotocane) (Mildane)
Dinoseb (Dinitro)
Dioxathion (Delnav)
Diphenamid (Enide)
Diphenylamine (DPA)
Diquat
Disulfoton (Di-syston), and metabolites
Dithiocarbamates
Diuron (Karmex), and metabolite
DNOC (Dinitrocresol)
Dodine (Cyprex)
DP, 2,4 (2,4-DP) (Dichlorprop)
EBDC
Edifenphos (Hinosan)
Endosulfan (Thiodan), and E. sulfate
Endothall
Endrin, and endrin aldehyde
EPN
EPTC (Eptam)
Esfenvalerate (Asana)
Etaconazole
Ethalfuralin (Sonalan)
Ethephon
Ethiofencarb (Croneton)
Ethion
Ethirimol (Milstem)
Ethofumesate (Nortron)
Ethoprop (Ethoprophos) (Mocap)
Ethoxyquin
Ethylene Dibromide (EDB)
Etridiazole (Terrazole)
Etrimfos
Extended Pesticide Profile
Famphur (Bash)
Fenamiphos (Nemacur)
Fenarimol (Rubigan)
Fenbutatin
Fenbuconazole (Enable)
Feniprothion (Sumithion)
Fenobucarb
Fenoxaprop-P-ethyl (Puma)
Fenpropathrin (Danitol)
Fenson
Fensulfothion (Dasanit)
Fenthion (Baytex)
Fentin
Fenvalerate (Pydrin)
Ferbam
Fipronil (Regent)
Flamprop-methyl (Mataven)
Fluazifop-butyl (Fusilade)
Fluazinam (Omega)
Fluchloralin (Basalin)
Flucythrinate (Cybolt) (Payoff)
Fludioxonil (Maxim) (Saphire)
Flufenacet
Flumetsulam (Broadstrike) (Python)
Flumioxazin (Valor)
Fluometuron (Cotoran)
Fluridone (Sonar)
Fluroxypyr (Starane)
Flusilazole (Nustar)
Flutolanil (Folistar) (Prostar)
Fluvalinate (Apistan) (Mavrik)
Folpet (Phaltan)
Fomesafen (Flexstar)
Fonofos (Dyfonate)
Forchlorfenuron
Fosetyl-Aluminum (Aliette)
Fusion (Fenoxaprop + Fluazifop)
Glufosinate (Finale) (Liberty)
Glyphosate (Accord/Roundup/Touchdown)
Halosulfuron-methyl (Manage) (Permit)
Haloxypop-methyl (Verdict)
HCB (Hexachlorobenzene)
Heptachlor, and heptachlor epoxide
Heptenophos (Hostaquick)
Herbicide Profile, Ionic
Herbicide Profile, Non-Ionic
Hexaconazole (Anvil)
Hexazinone (Velpar)
Hexthiazox (Hexygon)
Honey Pesticide Profile
Hop Pesticide Profiles A & B
Imazalil (Deccoziel)
Imazamethabenz-methyl (Assert)
Imazamox (Raptor)
Imazapic (Cadre)
Imazapyr (Arsenal)
Imazaquin (Scepter)
Imazethapyr (Pursuit)
Imidacloprid (Admire) (Provado)
Imidoxone (Phosmet Oxygen Analog)
Indole-3-butyric acid (IBA)
Ipordione (Rovral)
Isobenzan (Telodrin)
Isodrin
Isofenphos (Amaze), and oxygen analog
Isopropcarb (MIPC)
Isopropalin (Paarlan)
Isoxaben (Gallery)
Krovar (Bromacil + Diuron)
Lactofen (Cobra)
Lambda-Cyhalothrin (Karate) (Warrior)
Lenacil (Venzar)
Lindane
Linuron (Lorox)
Malathion, and oxygen analog Malaoxon
Maleic Hydrazide (MH-30)
Mancozeb (Dithane)
Maneb
MCPA (Rhomene)
MCPB (Tropotox)
MCPP (Mecopex) (Mecoprop)
Mecarban (Afos)
Mepronil (Basitac)
Merphos (Folex)
Metalaxyl / Mefenoxam (Ridomil/Gold)
Metaldehyde (Deadline) (Slug Fest)
Metam-sodium (Vapam)
Methamidophos (Monitor)
Methidathion (Supracide)
Methiocarb (Mesurol), and metabolites
Methomyl (Lannate)
Methoprene
Methoxychlor (Marlate)
Methyl Bromide
Methyl Paraoxon
Methyl Parathion (Penncap-M)
Metobromuron (Patoran)
Metolachlor (Dual)
Metribuzin (Sencor)
Metsulfuron-methyl (Ally) (Escort)
Mevinphos (Phosdrin)
Mexacarbate (Zectran)
Mint Pesticide Profile
Mint Pesticide Profile, Expanded (oil)
Mirex
Molinate (Ordram)
Monocrotophos (Azodrin)
Monolinuron (Aresin)
Myclobutanil (Rally)
Naled (Dibrom)
Naphthaleneacetic acid (NAA)
Napropamide (Devrinol)
Neburon (Propuron)
Nicosulfuron (Accent)
Nitrapyrin (N-Serve)
Nitrofen (Tok)
Norflurazon (Predict) (Solicam)
Nuarimol
Omethoate (Folimat)
Onion Pesticide Profile
Organochlorine Pesticide Profile
Organophosphate Pesticide Profile
Oryzalin (Surflan)
Ovex (Chlorfenson)
Oxadiazon (Ronstar)
Oxadixyl (Ripost)
Oxamyl (Vydate)
Oxycarboxin (Plantvax)
Oxymethon-methyl (Metasystox-R)
Oxymethon-methyl Sulfone
Oxyfluorfen (Goal)
Oxytetracycline (Terramycin)
Oxythioquinox (Morestan) (Quinomethion.)
Paclobutrazol
Paraquat (Gramoxone)
Parathion, and oxygen analog Paraoxon
PCA (Pentachloroaniline)
Pebulate (Tillam)
Pendimethalin (Prowl)
Pentachlorophenol (PCP)
Permethrin (Ambush) (Pounce)
Perthane (Ethylan)
Phenmedipham (Betanal)
Phenothrin (Sumithrin)
Phenthoate (Cidial)
Phenylphenol, o- (Orthoxenol)
Phorate (Thimet), and metabolites
Phosalone (Rubitox) (Zolone)
Phosmet (Imidan)
Phosphamidon (Swat)
Phoxim (Baythion)
Picloram (Tordon)
Piperonyl Butoxide
Pirimicarb (Rapid) (Pirimor)
Pirimiphos-ethyl (Primicid)
Pirimiphos-methyl (Actellic)
Potato Pesticide Profile
Potato Pesticide Profile, Expanded
Primisulfuron-methyl (Beacon)
Prochloraz
Procymidone (Sumilex)
Prodiamine (Barricade)
Profenofos (Curacron)
Profurralin (Tolban)
Promecarb (Carbamult)
Prometin (Pramitol)
Prometryn (Caparol)
Pronamid (Kerb) (Propyzamide)
Propachlor (Ramrod)
Propamocarb (Banol)
Propanil
Propargite (Comite) (Omite)
Propazine (Milorgard)
Propetamphos (Catalyst)
Propham (IPC)
Propiconazole (Tilt)
Propineb
Propoxur (Baygon)
Prothiofos (Tokuthion)
Pymetrozine (Fulfill)
Pyraclostrobin (Cabrio) (Headline)
Pyrazon (Chloridazon)
Pyrazophos (Afugan)
Pyrethrins
Pyrethroid Pesticide Profile
Pyridaben (Sanmite)
Pyrimethanil (Scala)
Quinalphos (Bayrusil)
Quinclorac (Facet)
Quinoxyfen
Quintozine (PCNB)
Quizalofop-ethyl (Assure)
Resmethrin
Rimsulfuron (Matrix)
Ronnel (Fenchlorphos)
Schradan (OMPA)
Sethoxydim (Poast)
Siduron (Tupersan)
Silvex (2,4,5-TP)
Simazine (Princep)
Simetryn
Spinosad (Conserve)
Strawberry Pesticide Profile
Streptomycin (by ELISA)
Strychnine
Sulfallate (Vegadex)
Sulfentrazone (Authority) (Spartan)
Sulfometuron-methyl (Oust)
Sulfosulfuron (Maverick)
Sulfotep (Bladafum)
Sulprofos (Bolstar)
Sweet Potato / Yam Pesticide Profile
T, 2,4,5 (2,4,5-T)
Tebuconazole (Folicur)
Tebufenozide (Confirm) (Mimic)
Tebupirimfos
Tebuthiuron (Spike)
Tecnazene (TCNB) (Fusarex)
Tefluthrin (Force)
Temephos (Abate)
TEPP
Terbacil (Sinbar)
Terbufos (Counter)
Terbutylazine (Primatol-M)
Terbutryn
Tetrachlorvinphos (Gardona)
Tetraconazole
Tetradifon (Tedion)
Tetramethrin
Tetrasul
Thiabendazole (TBZ) (Mertect)
Thiamethoxam (Actara)
Thifensulfuron-methyl (Harmony/Pinnacle)
Thiobencarb (Saturn)
Thiodicarb (Larvin)
Thiometon (Thitox)
Thionazin (Zinophos)
Thiophanate-methyl (Topsin-M)
Thiram
Tolclofos-methyl
Tolyfluanid (Euparen M)
Toxaphene
Tralkoxydim (Achieve)
Tralomethrin (Scout X-TRA)
Triadimefon (Bayleton)
Triadimenol (Baytan)
Triallate (Far-Go)
Triasulfuron (Amber)
Triazine / Triazinone Herbicide Profile
Triazophos
Trichlorfon (Dylox)
Triclopyr (Garlon)
Tridiphane (Tandem)
Trifloxystrobin (Flint)
Triflumizole (Procure)
Trifluralin (Treflan)
Triforine (Funginex)
Trimec
Triphenyltin Hydroxide (Fentin Hydroxide)
Vernolate (Vernam)
Vinclozolin (Ronilan)
Warfarin
Zineb
Ziram
Zoxamide