NAFS

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Heavy Metals

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Contamination of herbal materials with toxic substances such as arsenic can result from numerous origins. These include environmental pollution i.e. contaminated emissions from factories and leaded petrol, contaminated water including runoff water which finds its way into rivers, bore holes, lakes and the sea, pesticides, soil composition and fertilizers. This contamination of the herbal material leads to contamination of the products during various stages of the manufacturing or cultivation process.

Pesticides including arsenic and mercury in their chemical structures were commonly utilized until a few years ago and they are still employed in some countries. As toxic substances, they are likely to be present in many foods due to their abundance in nature, and it is important to note that concomitant ingestion of herbal products would add to the total concentration of toxic metals consumed by people.

It is thus imperative that herbal medicine and pharmaceutical manufacturers test for heavy metal content in their products as part of their quality control regime. According to the United States Pharmacopoeia heavy metals are classified into different classes according to their toxic potential, class 1 being the most dangerous up to class 2 and class 3 having the highest limit and being the least toxic.

Instrumentation

ICP-MS (Inductively Coupled Plasma Mass Spectrometry) is employed to detect heavy metal contamination. With ICP-MS it is possible to detect metals and several non-metals up to PPT (Parts per Trillion) for common elements. As a result of the low residue limits which are imposed by USP 233 (United States Pharmacopoeia), this instrument is ideal for this type of analysis.

NAFS uses state of the art analytical equipment to produce accurate tests results and maintain quick turnaround times. We have a turnaround time of 72 hours upon sample reception. At NAFS we maintain rigorous instrumentation calibration and performance qualification schedules to ensure our instrumentation is performing at an optimum. For the ICP-MS a system suitability check is done daily.
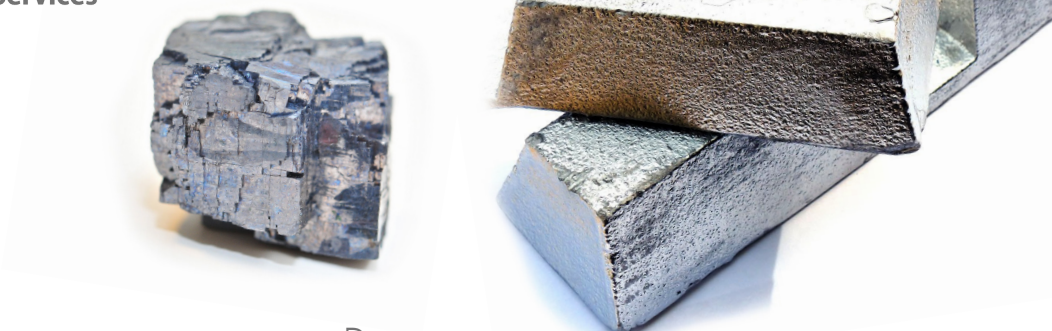
Test Panel

Heavy Metals	Class 1 Limit (ppm)	
	Oral	Inhalation
Cadmium (Cd)	0.5	0.2
Lead (Pb)	0.5	0.2
Arsenic (As)	0.1	0.5
Mercury (Hg)	3	1.5

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Class 2

Heavy Metals	Limit (ppm)	
	Oral	Inhalation
Cobalt (Co)	5	0.3
Vanadium (V)	10	0.1
Nickel (Ni)	20	0.5
Thallium (Tl)	0.8	0.8
Gold (Au)	10	0.1
Palladium (Pd)	10	0.1
Iridium (Ir)	10	0.1
Osmium (Os)	10	0.1
Rhodium (Rh)	10	0.1
Ruthenium (Ru)	10	0.1
Selenium (Se)	15	13
Silver (Ag)	15	0.7
Platinum (Pt)	10	0.1

Class 3 *(Upon Request)*

Heavy Metals	Limit (ppm)	
	Oral	Inhalation
Lithium (Li)	55	2.5
Antimony (Sb)	120	2
Barium (Ba)	140	30
Molybdenum (Mo)	300	1
Copper (Cu)	300	3
Tin (Sn)	600	6
Chromium (Cr)	1100	0.3

Personnel

Our personnel are well trained and qualified to report trustworthy, ethical results. At NAFS regular proficiency testing and training cycles are employed to ensure that each staff member produces the highest quality analytical results.

Pricing

Heavy Metals	-See Pricelist
Bulk samples	-Discounted

Contact Us

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