



“Testing Protocols Are Just Not Good Enough” – Rob Thomas on Heavy Metal Testing in Cannabis

By Leo Bear-McGuinness

Most people don't associate cannabis with heavy metal. Reggae is the drug's clichéd ambient accompaniment, after all. But as every lab analyst in the cannabis industry knows, wherever marijuana grows, heavy metals aren't far away.

Of course, when at trace levels in the crops' soil, the metals are hardly heavy. Yet, as soon as they're absorbed into the plant, these minute metals can cause big problems for cannabis consumers. Lead exposure alone has been linked to high blood pressure, kidney damage, and birth complications in pregnant women – and that's just one of four heavy metals that most US states recommend screening for in cannabis samples.

But according to one expert, these state-level suggestions aren't safe enough.

“State regulators are requiring testing for the big four heavy metals: lead, cadmium, arsenic, and mercury,” says Rob Thomas, principal consultant of Scientific Solutions. “However, from my perspective it's absolutely clear that they need to be testing for a lot more – probably between 10 and 15 elemental impurities.” And Thomas should know; he literally wrote the book on what heavy metals to look out for in drug products: [*Measuring Elemental Impurities in Pharmaceuticals: A Practical Guide*](#).

“When I finished my book on elemental impurities in pharmaceuticals, many people in the

pharmaceutical/dietary supplements industry said the cannabis testing community was crying out for educational material,” he tells Analytical Cannabis, “because they didn't have the necessary experience to ensure the generated heavy metal data was of the highest quality.”

“So, they suggested I spend some time understanding heavy metal testing procedures in the cannabis industry. That was six months ago, and in that time my research has confirmed these suspicions – the industry is in desperate need of robust and validated methodology to test for heavy metals.”

Now countless words deep into his latest book, *Measuring Elemental Impurities in Cannabis and Hemp: A Practical Guide*, Rob took some time out of his writing schedule to explain why the cannabis sector is too light on heavy metal testing.

An industry in infancy

“I think it's fair to say that because the cannabis industry is so young, they don't have a good understanding of the number of heavy metals that might end up in the products,” Thomas explains. Although this misunderstanding, according to Thomas, is natural of a nascent industry.

“For almost 100 years, the pharmaceutical industry was basically testing for one element: lead;

because of the qualitative nature of the test, they had no idea what other heavy metals were present in the pharmaceutical products.”

“So today, the FDA regulates pharmaceuticals for 24 elemental impurities,” he adds. “However, it’s taken the industry almost 25 years to measure them using modern instrumental techniques such as plasma spectrochemistry.”

When it comes to cannabis, most state regulators currently advise labs to test samples for just four heavy metals: lead, cadmium, arsenic, and mercury. It’s a number twenty shy of the standards the FDA sets for pharmaceuticals, and according to Thomas, it’s high time cannabis regulations caught up.

Although it should be noted that some of these elements are unique to pharmaceutical manufacturing. “It’s clear that the cannabis industry needs to be looking at a lot more elemental contaminants because hemp and cannabis are natural hyper-accumulators of heavy metals in the soil and growing medium,” he says.

Heavy growing

Indeed, cannabis plants are so adept at absorbing metallic elements through their roots they can even [be used to bioremediate land polluted by smelting and vehicle emissions](#).

“So, wherever you plant cannabis and hemp, especially if they are grown outdoors, you need to characterize the soil for what heavy metals might be present,” Thomas continues. “Unfortunately, that’s not going on at the moment. As a result, cultivators don’t have a solid understanding of what heavy metals might be absorbed or accumulated into the plants. And then when the cannabinoids (THC, CBD, etc.) are extracted, they will end up in the cannabis products.”

According to Thomas, cannabis’ keenness to accumulate elements could lead it to absorb more metals than labs are currently screening for. Yet, without federal intervention, these mysterious metals could go undetected in most states.

“Whenever the FDA gets involved in the cannabis regulatory process, I’m convinced they would take one look at the way it’s being regulated and say the testing protocols are just not good enough,” Thomas says. “However, at the moment, I don’t think the

industry is that serious about being regulated, because it will slow down its rapid growth.”

Just like pesticides, microbes, and other cannabis contaminants, heavy metals can endanger the health of cannabis consumers if not removed from the crop and its eventual products. Medical cannabis patients are especially at risk from exposure due to their weakened immune systems. These consumers aren’t properly protected by wider regulations, they could become the ultimate, if shamefully belated, incentive.

“Unfortunately, I believe that it will take a major catastrophe,” Thomas warns. “People might get seriously ill or even die before there are major changes to the regulatory process.”

Vape fear

Thomas’ warnings to the FDA and other cannabis regulators may be stark, but they’re fueled from a genuine fear for the safety of the cannabis industry’s clientele.

“I also teach in a local high school and I can tell you now the kids will vape anything they can get their hands on,” he says. “And we’re finding now that many of the cannabinoid delivery devices, particularly vaping sticks, are picking up heavy metals, not from the cannabis product, not from the liquid or the oil, but from the metallic components inside these vaping devices.”

Vaping is [projected to be a key growth avenue in the US](#) cannabis market, yet [incidences of lead contamination in cartridges](#) have led some regulators to issue public safety bulletins advising patients and caregivers “to have cartridges tested at their own expense.”

“It’s a serious problem,” Thomas continues. “There’s a good chance that they are inhaling particles of heavy metals, such as lead, when they vape. And we don’t have a clear understanding of the problem at the moment, because the industry is not really investigating it.”

As of October 15, the Centers for Disease Control and Prevention has associated the deaths of 33 people and the lung injuries of 1,479 others with the use of e-cigarettes. With the spotlight now firmly on the dangers of cannabis vaping, perhaps Rob Thomas’ call-to-action will be heard after all.