

# Targeted Environmental Investigation Guide

## Multiple Heavy Metals Exposure Assessment

### Focused Assessment Based on Test Results and Home Situation

Olivia's hair mineral analysis shows elevated levels of:-

- Above upper limit (5)
  - Lead 1.3 µg/g (ref <0.80), Mercury 0.61 µg/g (ref <0.40), Silver 0.67 µg/g (ref <0.18), Nickel 0.37 µg/g (ref <0.30), Copper 84 µg/g (ref 11-37)
- Close to upper limit (4)
  - Antimony 0.061 µg/g (ref <0.066), Barium, 1.3 (ref <1.5), Tin 0.28 (ref <0.30), Aluminium 5.1 (ref <8.0)

These elevations likely result from a combination of impaired detoxification capacity (due to nutritional deficiencies) AND ongoing environmental exposure.

The low molybdenum suggests she cannot eliminate copper effectively, low selenium removes mercury protection, and suspected iron deficiency impairs multiple detox enzymes - causing normal environmental exposures to accumulate.

Your house is 1940s construction, fully renovated 2 years ago, with built-in water filtration for drinking water only, and a mineral salt heated pool with professional maintenance.

### Investigation Priority:

Based on your specific situation, it's recommended we start by focusing on the four most likely sources:

1. Pool chemicals (copper)
2. Unfiltered bathing water (multiple metals), and
3. Any remaining 1940s materials (lead/copper)
4. Various items around the house

### IMMEDIATE PRIORITY ACTIONS

#### 1. Pool Caretaker Interview

Your pool system (mineral salt + heating + professional maintenance) is a potential source for multiple metals. Schedule this interview immediately:

Essential Questions to Ask Your Pool Caretaker:

#### Chemical Products:

- "What specific chemicals do you use?
  - Can I see the product labels or get brand names?"

- "Do any products contain copper?
  - Even if it's called 'algaecide' or 'antimicrobial'?"
- "Have you recently changed to any new products?"
- "When do you add chemicals - how often and what schedule?"

#### **Copper-Specific Questions:**

- "Is there any copper ionisation system or copper-based algae treatment?"
- "Are there any copper components in the heating system or equipment?"
- "Have you noticed any green staining around the pool equipment or surfaces?"
- "Has the pool water ever had a blue-green tint?"

#### **Water and Testing:**

- "Do you ever test the pool water for metals, not just pH and chlorine?"
- "Where does the fill water come from - town supply or different source?"
- "Have you noticed any changes in water colour or quality recently?"

#### **Equipment Assessment:**

- "What materials are the heating coils or heat exchanger made from?"
- "Any copper pipes or fittings in the pool system?"
- "When was equipment last replaced or serviced?"

#### **Collect This Information:**

- Product labels or MSDS sheets for all chemicals used
- Chemical application schedule
- Any water testing results if available
- Equipment specifications or manuals if accessible

## **2. Water Filtration Company Contact**

Your drinking water is filtered but bathing water is not. This could be another possible exposure source:

#### **Essential Questions for Your Filtration Company:**

##### **System Specifications:**

- "What specific metals does our system remove?
  - Please confirm: lead, mercury, silver, copper, antimony, nickel?"
- "Can you provide the technical specifications or performance data?"
- "What type of filtration technology is used?"

##### **Testing Capabilities:**

- "Can you test our water when you next service the system?"
- "Do you test both before and after filtration?"
- "What metals do you test for?"
- "When was the system last tested and what were the results?"

##### **Maintenance and Performance:**

- "When was our system installed and last serviced?"
- "How often do filters need changing?"
- "Could the system's performance have declined since installation?"
- "Should we consider extending filtration to bathroom water?"

##### **Collect This Information:**

- Exact model number and specifications
- Any existing water test results
- Maintenance schedule and records
- Cost estimate for whole-house filtration if recommended

## **3. Home Assessment Documentation**

### **1940s Construction with Renovation - Targeted Investigation:**

#### **The One Bathroom with Potential Old Materials:**

- Take photos of visible plumbing under sinks, behind toilet

- Document any copper pipes you can see
- Note any green or blue staining around fixtures
- Check if hot and cold water taste different from this bathroom
- Compare water pressure and quality to the renovated bathrooms

#### **Water Quality Differences:**

- Test taste/odour differences between taps
- Note if morning water tastes different than after running
- Check if hot water has metallic taste or smell
- Document any discoloration when first turning on taps

#### **4. Check around the house checklist**

Do you have any of the following around the house? If yes provide further details

- ☐ Fertiliser (lead/mercury)\_\_\_\_\_
- ☐ Lead glazed pottery items (lead) \_\_\_\_\_
- ☐ Hemorrhoidal preparations (mercury) \_\_\_\_\_
- ☐ Skin lightening agents (mercury) \_\_\_\_\_
- ☐ Cigarette smoke (nickel) \_\_\_\_\_
- ☐ Photographic processes (silver) \_\_\_\_\_
- ☐ Colloidal silver products (silver) \_\_\_\_\_
- ☐ Anti-Microbial products with silver mentioned \_\_\_\_\_

### **COMPREHENSIVE TESTING OPTIONS FOR CONSIDERATION**

#### **(If Initial Investigation Inconclusive)**

#### **Professional Water Testing Services**

**Testing Companies:** (There are probably many more, worth shopping around)

- **Eurofins Environmental Testing** (verify five-metal capability before booking)
- **ALS Environmental** (comprehensive heavy metals panel available)
- **Sample:** First-draw and running water from multiple taps

#### **Essential Tests for Your Situation:**

- Lead, mercury, silver, copper, nickel (bonus – antimony, barium, tin, aluminium)
- pH, hardness, chlorine levels
- Bacterial contamination screen

#### **Before Booking ANY Service - Critical Questions:**

- "Can you test for lead, mercury, silver, copper AND nickel in the same samples?"
  - antimony, barium, tin, aluminium are a bonus
- "What are your detection limits for each metal?"
- "Do you provide before and after filtration testing?"
- "Can you test pool water using the same metal panel?"

## **Specialised Environmental Assessment (If Multiple Sources Suspected)**

**Environmental Testing Companies:** Most general companies cannot test for all the metals, especially mercury and antimony. Always verify capabilities first.

### **Flame Retardant/Antimony Testing:**

- Antimony testing is highly specialised
- Most general environmental companies cannot perform these tests
- Ask for referrals to specialised laboratories if needed

## **Pool Water Testing (If Caretaker Interview Suggests Copper Sources)**

### **Pool-Specific Metal Testing:**

- Same testing companies (Eurofins/ALS) can often test pool water
- Focus on copper, silver, and other metals found in pool chemicals
- Compare pool water metal levels to municipal water supply baseline

## **SUGGESTED DECISION TREE FOR YOUR INVESTIGATION**

### **After Pool Caretaker Interview:**

#### **If Copper Products Confirmed:**

- Pool likely major copper source (explains elevation from 11-37 normal to 84)
- May also explain silver elevation (silver-based antimicrobials often used with copper)
- Request immediate product change to copper-free alternatives
- Consider pool water testing before and after changes
- May resolve copper elevation within 3-4 months

#### **If No Copper Products Found:**

- Pool unlikely to be major source
- Focus investigation on water filtration system
- Consider other environmental sources

### **After Water Filtration Assessment:**

#### **If System Only Removes Some Metals:**

- Unfiltered metals in bathing water likely major source
- Consider whole-house filtration or bathroom-specific filtration
- May address 3-4 of the 6 elevated metals simultaneously

#### **If System Removes All Five Metals:**

- Drinking water confirmed not the source
- Unfiltered bathing water still potential exposure (shower steam, skin absorption)
- Focus on bathroom water treatment or other sources

#### **If System Performance Declined:**

- May need filter replacement or system upgrade
- Consider water testing to confirm current filtration effectiveness

## **SUCCESS INDICATORS**

### **You'll Know You've Found the Source When:**

- Pool caretaker confirms regular use of copper-based chemicals
- Water filtration company confirms unfiltered metals in bathroom water
- Visible copper plumbing or green staining in older bathroom
- You associate products around the house with source
- Professional testing shows high metals in suspected source

## Effective Remediation Indicators:

### Pool source eliminated:

- Pool water loses blue-green tint if present
- No more green staining around pool equipment
- Pool maintenance becomes easier

### Water source addressed:

- No more metallic taste in shower water
- Reduced mineral buildup around fixtures
- Improved water quality in affected areas

### Hair Mineral Analysis Follow-up:

- Repeat HTMA in 4-6 months to track improvements
- Expect gradual decline in metal levels over 6-12 months
- Some metals (like mercury) may take longer to normalise than others (like copper)

This targeted approach focuses on your four most likely sources based on your specific home situation. The systematic investigation should identify your major exposure sources within 2-4 weeks, allowing for prompt and effective remediation.

*This information is for educational purposes. Always consult with qualified environmental professionals for comprehensive multi-toxin assessment and remediation.*

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