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## Integrated R&D System for Pb, Hg, Mg, Mn Analysis



### Process Flow Stages

Sample Intake

Routing

Reagent Dosing

Detection

Purification



### Actuation Components



#### 4-Channel Relay Module

Controls all 12V devices

Arduino/RPi GPIO pins  
All pumps & valves



#### 12V Solenoid Valves (NC)

Route samples to test chambers

Relay CH1, CH2, CH3  
Test chambers A, B, C



#### 12V Diaphragm Pump

Main water circulation

Relay CH4  
Intake → System