

# PICOYUNE

Advanced mercury monitoring anytime & anywhere with an affordable wearable sensor

B2C



**A next-generation portable mercury sensor** (including a wearable model) that will help gold shops, non-governmental organizations, miners, and industries detect mercury contamination in real time while in the field.

Their **B2C analyzer, MA-1**, uses a novel spectroscopic method, plasmonic sensing, based on changes in visible light transmission of a gold amalgam nanoparticle film. It mitigates mercury exposure by giving immediate data in the field to authorities and nonprofit organizations (such as Pure Earth) addressing community concerns around water and food safety.

## MONITORING AND ACTIONABLE DATA

United States

2014 <

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## Problem

Artisanal & small-scale gold mining (ASGM) produces almost 40% of all anthropogenic mercury pollution worldwide. During gold amalgam processing, mercury vapor is released into the environment concentrated around gold shops (small processing & sales facilities). Gold shop workers and public organizations don't know with certainty where and when mercury is present.

## Solution

A patented, wearable and automatic mercury vapor monitor (**MA-1 model**) that includes:

- A plasmonic technology sensor that uses a film of nanoparticles sensitive to mercury vapor.
- An alarm system to indicate when air is harmful to breathe above a regulatory (OSHA) ceiling of 100 µg/m<sup>3</sup>

## Market

The global ASGM sector includes 50K amalgam-processing gold shops that need to keep the mercury air pollution in and around the shops at low levels. Public authorities may also use the tool to develop and enforce regulations. The total global mercury analysis market is valued at around USD800M.

Other potential markets include occupational safety and environmental monitoring at contaminated sites.



Picoyune started testing with gold shops regulated by the Guyana Gold Mine Commission (GGMC) to demonstrate performance, understand the organization's interest in the product, and is expanding testing and use in other countries through their participation in the [Amazon CoLab](#).

## Key Metrics

- Seeking \$200K in funding.
- Successfully raised USD \$3 million in grant funding from the US National Science Foundation, National Institute of Health, Department of Energy, and Conservation X Labs.

## Competitive Landscape

Compared to other alternatives, such as Atomic Absorbance Spectrometer (\$45K, 50 pounds), **Picoyune's sensor is affordable**, lightweight, doesn't require a dedicated operator, and monitors the air directly around the operator's working station.

## Funding Needs

Seeking a USD \$200,000 investment to:

- Expand Amazon field testing to water, soil, and biological samples.
- Train public & non-public organizations on using sensors.
- Deploy a field sales and support team to the region.



**The Artisanal Mining Grand Challenge** is a global competition first launched in 2019 by Conservation X Labs. This Challenge seeks to advance innovative solutions that transform artisanal and small-scale gold mining into a more environmentally responsible and socially equitable practice. Picoyune is field-testing its solution in the **Amazon CoLab**, the Challenge acceleration program.

[www.artisanalminingchallenge.com](http://www.artisanalminingchallenge.com)