# JustUCO

# Stopping Biofuels Feedstock Fraud

*JustUCO* is committed to *stopping used cooking oil feedstock fraud* in the biofuels supply chain.

We provide an *end-to-end hardware and software solution* that enables regulators to efficiently identify fraudulently labeled used cooking oil.

# The Problem

Production of *renewable diesel* and *sustainable aviation fuel*, both lipid-based drop-in biofuels compatible with existing infrastructure, is rapidly expanding.

*24B gallons per year* of biofuels were produced in the US in 2023. Another 3BNGY in production expansion currently underway[1].
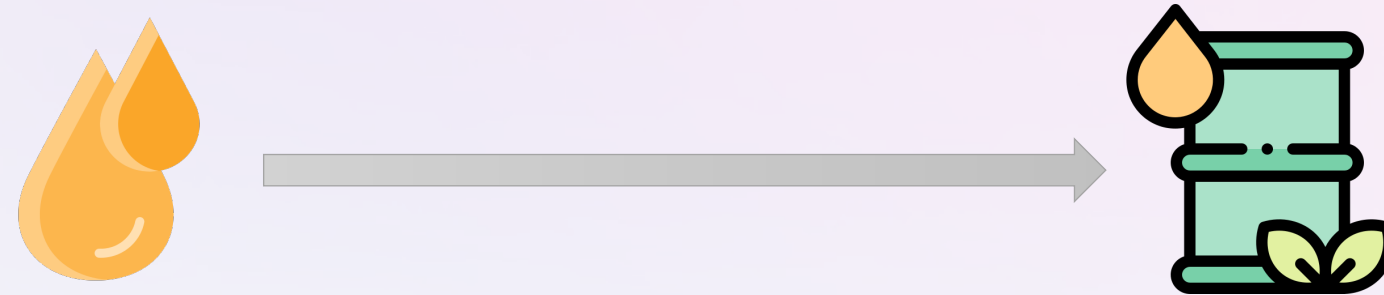


**However**, ~50% of the *used cooking oil* being sourced as a biofuels feedstock may be *fraudulently labeled palm oil*[2].

This *fraud* is committed to enable access to more carbon credits and subsidies.

1. https://biodieselmagazine.com/articles/renewable-diesel-saf-project-roundup-report-2518451
2. 2. https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/oil/121423-new-biofuel-data-triggers-fresh-fraud-concerns-over-eu-imports

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# Impact of Biofuels Feedstock Fraud

## 3.2M Metric Tons

of Carbon Emissions Annually

## $1.9 Billion

of Fraudulent Tax Credits and Subsidies per Year

*Internal estimates for the US only, based on 50% adulteration rate of UCO
feedstock in developed countries where palm is not allows from ISCC report

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# Current Solutions

## *No solution*

exists for regulators today to identify mislabeled used cooking oil

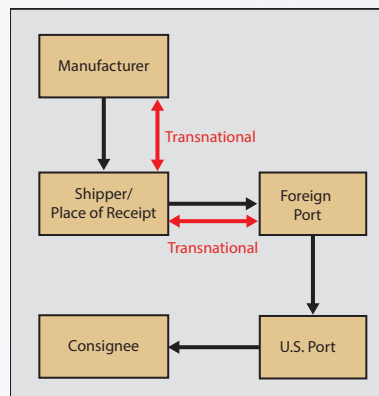… and the market has reacted. ***Unprecedented increases*** in "used cooking oil" from China and Southeast Asia



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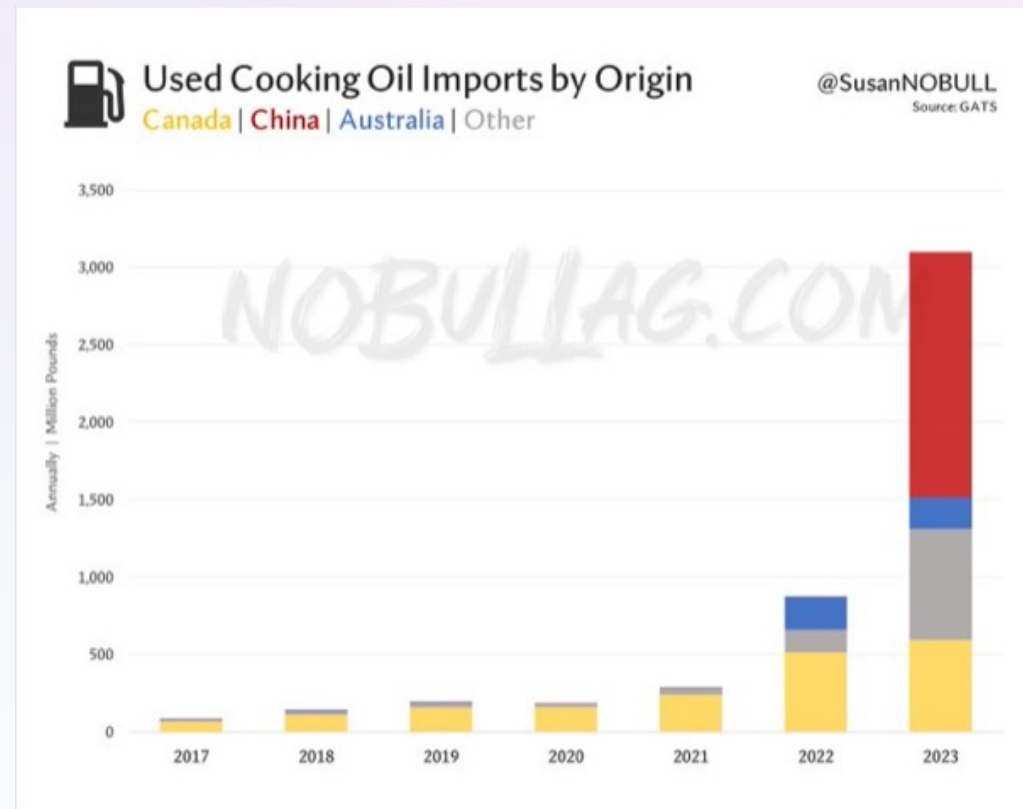
# Our Approach

We use a *multi-faceted approach*, including *handheld sensors*, *web-based software*, *machine learning*, and *advanced analytical layers* to combat adulteration effectively.
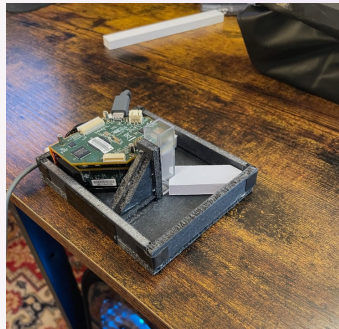


*Our prototype handheld sensor (bootstrapped in-house)*





**1**

## Handheld Sensors

Enables field testing for immediate results.

**2**

## Web-based Software

Allows regulators to securely upload and analyze test results from our handheld sensor to the cloud

**3**

## Machine Learning (Software Layer)

Utilizes proprietary machine learning algorithms to identify whether a sample is adulterated

## Supply Chain Analytics (Software Layer)

Integrates supply chain data to identify sources of fraud and enable efficient regulation

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# Early Results

*100% detection rate* for adulterated vs unadulterated used cooking oil (UCO) samples



Predicted vs. Actual Adulteration Level
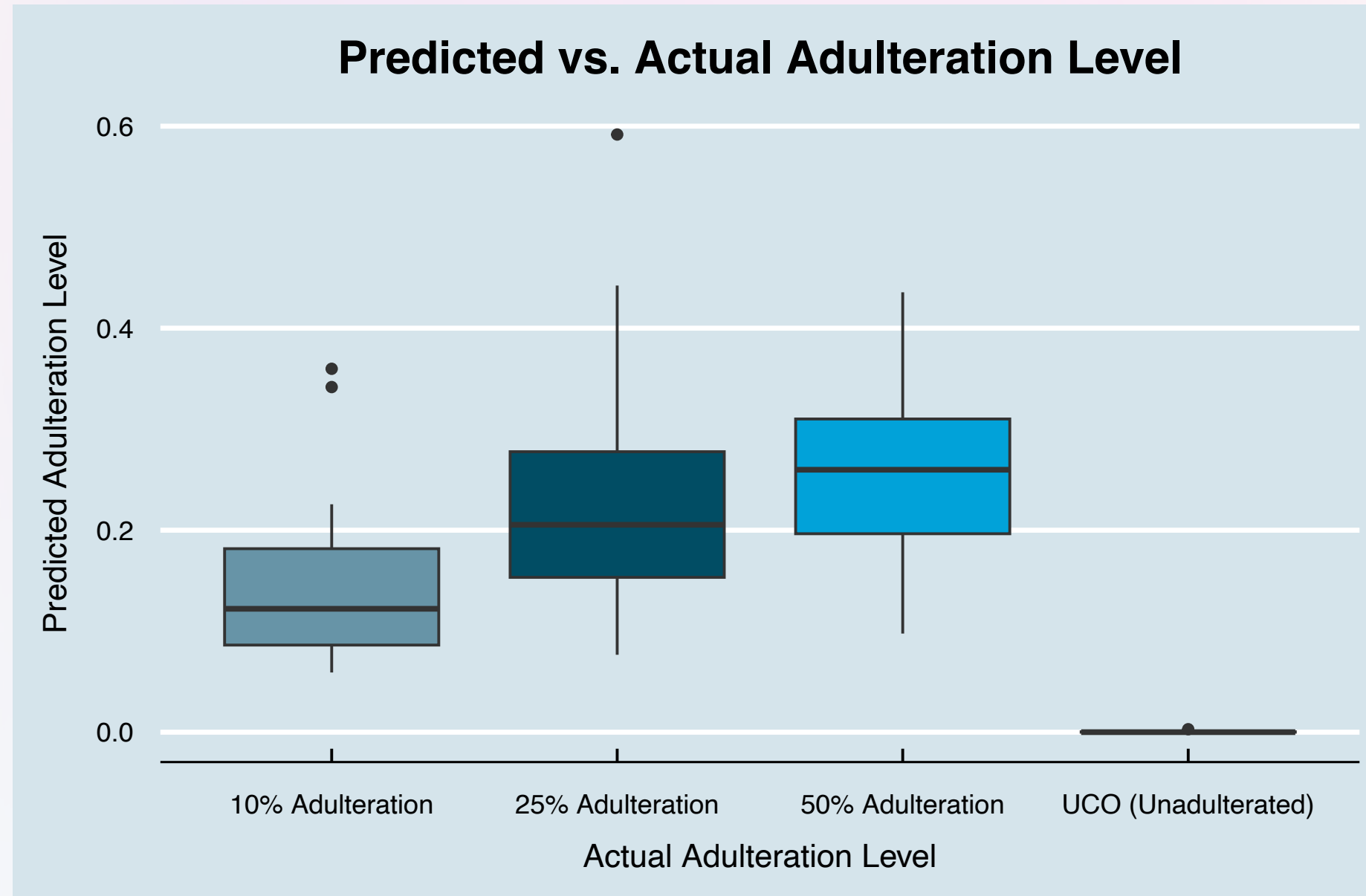
# Our Team

### Nicholas Renegar, Ph.D
### Co-Founder

- PhD Operations Research, MIT
- 5 years supporting regulators to prevent adulteration in food supply chains. Operationalized tools now used by US FDA and Chinese authorities.
- Thesis work on applications of machine learning to agricultural supply chains and biotech dev.
- Previously lead business development at Yield10 & leadership contacts across biofuels industry.

### Xun Gong, Ph.D
### Co-Founder

- PhD/MD from Mayo Clinic and Research Scientist at MIT (Strano Lab, Chem E)
- Numerous publications and patents on sensors, with previous work on developing sensors for detection of food adulteration
- Strong technical background in spectroscopy, hardware development, 3d printing, grant writing, lab management

### Professor Anthony J. Sinskey, Sc.D
### Advisor

- Professor of Biology at MIT
- Co-founder or scientific co-founder of multiple companies with IPOs/exits including Genzyme, Merrimack Pharmaceuticals. Metabolix and Tepha
- Principal Investigator on MIT's Food Safety and Sensing Initiative for adulteration in food supply chains

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