

Kuukibot Air Quality Twitter Alerts: A Proposal

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3PPROJECTS,LLC: **P**ROCESS, **P**ILOTS, BEST **P**RACTICES

What problem are you solving?

Atmospheric Release of Hazardous Chemicals are a Public Safety Issue

Present alerts catch one's attention; but, do not give laypeople actionable information:

Public (including public officials) live and/or work close to areas where chemicals/power is manufactured, transported, or used in other facilities.

TCEQ has invested a lot of resources in the documentation of its information. However, the public does not have the time nor the inclination to read online manuals after receiving a Twitter alert.

Plan for Incorporating Actionable Information



Kuukibot
@kuukihouston

1,3 Butadiene levels are high at Houston Milby Park A169 [K]! 4.04 ppb.
This may cause respiratory issues.



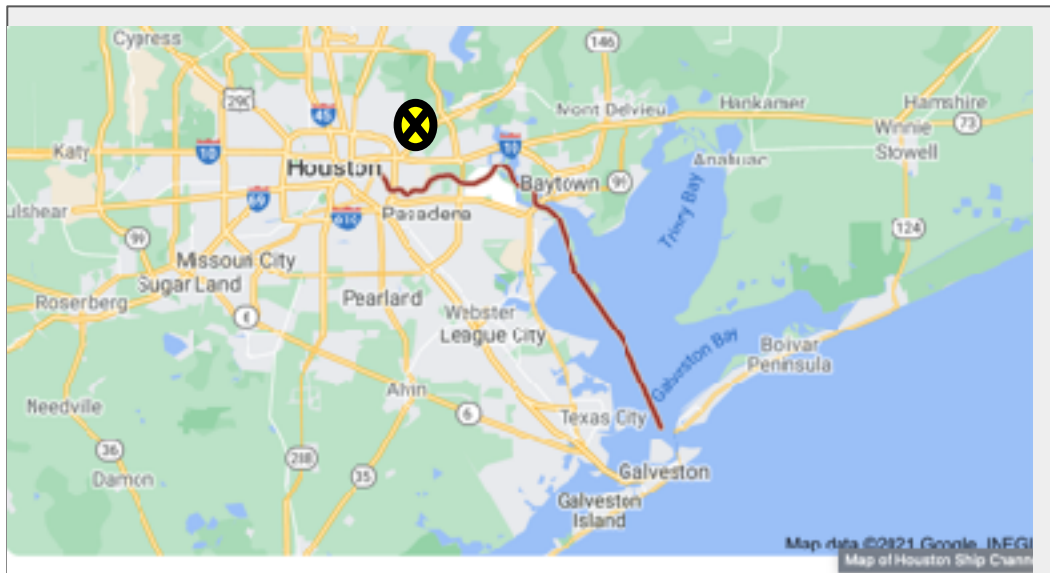
What?

When,
Where?

How much?

What is your solution? kuukibot_info.com

Map with sensor location



Hot Link to
Material Safety
Data Sheet



MSDS

1,3 Butadiene

Historian

Hourly Updates



Time-series plot with previous data
points, Monthly Average, Min, Max,
and Permit Violation Trigger

Request hourly
updates until
toggled off

MSDS

Physical Properties
[View & Download PDF](#)

Chemical Formula: C₆H₆

Molar Weight: 78.11 g/mol (1992)

Lower Explosive Limit (LEL): 1.2% (1992)

Upper Explosive Limit (UEL): 7.8% (1992)

Auto-ignition Temperature: 500 °F (260 °C) (1992)

Boiling Point: 176 °F (79 °C) (1992)

Vapor Pressure: 180 mm Hg at 70 °F, 760 mm Hg at 220 °F (1992)

Vapor Density (Relative to Air): 3.41 (1992)

Solubility (Relative to Water): Insoluble (1992)

Flash Point: 100 °F (38 °C) (1992)

Freezing Point: 5 °F (-15 °C) (1992)

Stability: Stable (1992)

Reactivity: Incompatible with strong oxidizers (1992)

Hazardous Materials: See MSDS for details (1992)

TLV-TWA: 1 ppm (based on 10% of lower explosive limit); a potential occupational carcinogen (p1006, 1014)

AIR (Acute Ingestion - 5-Minute Levels)

Exposure Period	ADL-C	ADL-D	ADL-E
15 minutes	400 ppm	400 ppm	2000 ppm
30 minutes	400 ppm	400 ppm	2000 ppm
60 minutes	400 ppm	400 ppm	2000 ppm
4 hours	400 ppm	400 ppm	2000 ppm
8 hours	400 ppm	400 ppm	2000 ppm

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Historian/"Watch List"

Chemical	Notebook	Last Trade	Change Since Close	Change Since Close (%)	Day High	Day Low	Volume	52Wk High	
Benzene		\$130.17	-\$1.47	-0.63%	\$233.12	\$229.74	4,320	\$275.87	
Ammonia		\$83.93	-\$0.65	-0.77%	\$85.62	\$83.04	161	\$90.6137	
H2S		\$86.92	+\$0.75	+0.87%	\$87.66	\$86.12	990	\$91.775	
NOx		\$90.00	-\$0.80	-0.92%	\$191.68	\$189.74	15	\$197.21	
SOx		\$141.31	-\$0.83	-0.54%	\$245.0557	\$241.24	2,914	\$267.04	
1,3 Butedene		\$26.83	-\$0.41	-1.51%	\$27.51	\$26.765	8,376	\$36.00	
		.2 ppb	+1	10%	.2	-.1	X	10	-.1

What is your business model?

- *How will your social enterprise be sustainable*
 - *Grants,*
 - *Subscribers (charge for watch list archives)*

- *How much does your solution cost?*
 - *Cost of Website + Cost of Development + Cost of Maintenance*

- *How do you measure success?*
 - *Responsiveness of: Regulators, Regulated*

What is your projected impact, if you succeed?

What is the potential market of clients and beneficiaries?

- *AirNow, EPA site of US emissions including smoke from wildfires*
- *Neighborhoods and major thoroughfares in vicinity of manufacturing sites*

How many can you reasonably reach and serve?

- *Equal to the number of people currently receiving kuukibot alerts*

Is there growth potential?

- *Yes, with Climate Change (more storms, more extreme weather events)*
- *Aging infrastructure and growing population*

How will you track and measure your impact?

- *Benchmark against other public data of this kind*

Who will help you?

- *Who is on your team?*
 - *Recruit 2 individuals (Experience in app development, geocoding)*
- *Looking to solicit feedback from*
 - *Current kuukibot Team (January Advisors, Rice University Intern & Professor*
 - *Houston Air Alliance,*
 - *Neighborhood Groups,*
 - *TCEQ, First Responders*
- *Why is your team the best group to create/execute this solution?*
 - *As project facilitator, I have a background in Air Control Technology, Sensors, Data Science, “Citizen Science” projects, and Best Practices for Data Visualization*

What is your “ask”?

- *Access to TCEQ Data, mapping resources*
- *\$60.5k = \$1k (Website + Access to kukkibot script, documentation) +*

\$48k (\$100/hour, 6 weeks @ 40 hour/week, 2 coders)

+

\$11.5k (legal, marketing, troubleshooting)