

Los Angeles County Fire Department Health Hazardous Materials Division Emergency Operations Section



FRUITLAND MAYWOOD Magnesium Explosion/fire

June 14, 2016

Fruitland Maywood Magnesium Explosion/Fire

- June 14, 2016 at 2:31 in the morning.
(LACoFD) units responded to a 3rd alarm commercial building fire, located at 3570 Fruitland Avenue in the City of Maywood.
- Panda International Trading (PIT)
- Propane and Waste Oil only HazMat Disclosed in CERS.
- Second Business, Sokor Metals (Not Permitted).



Fruitland Maywood Magnesium Explosion/Fire

- Approximately 30 minutes into the fire intermittent, small explosions were observed.
- The explosions continued for approximately one hour, leading to a larger explosion that propelled burning metal and debris several hundred feet into the air.
- Burning magnesium, with the addition of fire suppression water, would account for the explosions observed.



Fruitland Maywood Magnesium Explosion/Fire



Fruitland Maywood Magnesium Explosion/Fire

- The businesses on the north side of Fruitland Avenue are located in the City of Vernon.
- Maywood residential properties border the south side – East 52nd Street.
- A mandatory evacuation was issued for East 52nd Street from Everett Avenue to Maywood Avenue.



Fruitland Maywood Magnesium Explosion/Fire

- Chemicals of Concern (COC's) heavy metals, Nitric & Hydrochloric Acid 1:3 Aquaregia
- Air monitoring
- Run off
- Responders and Public Exposure
- Gross decontamination of vehicles and turn outs
- EOS made referrals to AQMD, Public Health, and EPA.



Fruitland Maywood Magnesium Explosion/Fire

- Incident command post (ICP) moved three times
- XRF utilized to identify hazardous waste levels of contamination (ASH)



Fruitland Maywood Magnesium Explosion/Fire

- The only items in CERS were propane and waste oil from PIT
- Sokor Metals was operating without a permit and illegally treating hazardous waste.
- Legally, PIT was not required to disclose Magnesium (ingots) Metal.



Fruitland Maywood Magnesium Explosion/Fire

- EOS and Enforcement one week prior (6/7)
- A reaction occurred with incompatibles. Sokor Metals was cited and issued a Notice of Violation
- Aquaregia - Nitric and Hydrochloric Acid 1:3 to extract Precious Metals No Permit
- Illegal Treatment



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The fire was extinguished on June 15 at approximately 3:30 in the afternoon, and all firefighting operations were completed on June 16th.



30 Hours to extinguish fire

Smother and Metl X



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USEPA confirmed the residential areas were contaminated with Heavy Metals at HW Levels.



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- Fire Fighters conducted Gross Decon on all homes on the North side of 52nd Street.
- Rinseate diked, contained, collected and profiled prior to disposal
- Responders turnouts bagged and sent out for cleaning



Fruitland Maywood Magnesium Explosion/Fire

- The Red Cross evacuation center at the Maywood YMCA.
- Day 2 (6/15) - able to repopulate South Side of 52nd Street and surrounding areas.
- Criteria based on no observable contamination and AQMD air sampling.
- Approximately 150 individuals from 17 Parcels remained evacuated.
- Day 4 (6/18) evacuated families moved to “local” motels.



Fruitland Maywood Magnesium Explosion/Fire

June 16, 2016 - Transition to Unified Command: USEPA, HHMD, and Public Health.



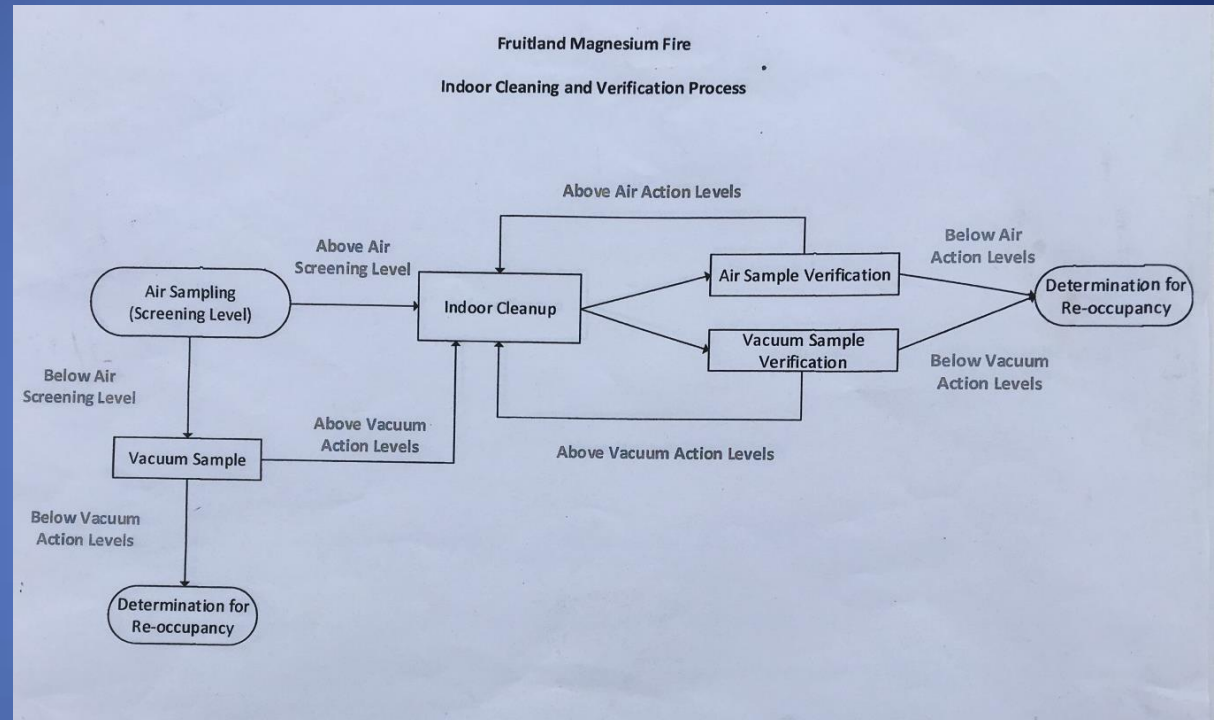
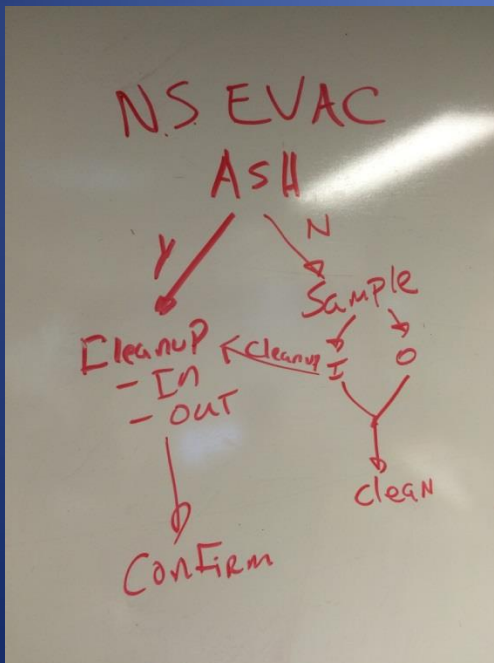
Fruitland Maywood Magnesium Explosion/Fire

- Unified command challenge: establishing action levels and clean-up standards.
- EPA with the Agency for Toxic Substances and Disease Registry (ATSDR) and DPH toxicologist and epidemiologist.



Fruitland Maywood Magnesium Explosion/Fire

- Decision Algorithm
- Determining Action Levels proved to be very difficult.



Fruitland Maywood Magnesium Explosion/Fire

Restoring utilities to community prior to repopulation was vital: Electric & phone lines impacted by fire.



Fruitland Maywood Magnesium Explosion/Fire

Evacuees allowed to re-enter homes for clothing and medication (north side of E. 52nd St.).
Coordination/Access



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Community Information Center (CIC) set up on East 52nd Street.



Fruitland Maywood Magnesium Explosion/Fire

Outdoor Air Monitoring



	Close proximity sample (50 ft SE of fire) (ng/m3)	Maywood Christian (ng/m3)	Fishburn Elementary (ng/m3)	Vernon Fire Station #1 (ng/m3)	Close proximity sample (35 ft WNW of fire) (ng/m3)	Acute REL (ng/m3)
	(Sample #1)	(Sample #2)	(Sample #3)	(Sample #4)	(Sample #5)	
Arsenic	BELOW DETECTION LIMIT	BELOW DETECTION LIMIT	BELOW DETECTION LIMIT	BELOW DETECTION LIMIT	87	200
Chlorine	20,200	1,610	1,430	1,440	30,700	210,000
Copper	1,430	25	11	18	6,820	100,000
Nickel	BELOW DETECTION LIMIT	BELOW DETECTION LIMIT	BELOW DETECTION LIMIT	BELOW DETECTION LIMIT	7	200
Vanadium	BELOW DETECTION LIMIT	BELOW DETECTION LIMIT	BELOW DETECTION LIMIT	BELOW DETECTION LIMIT	BELOW DETECTION LIMIT	30,000

Fruitland Maywood Magnesium Explosion/Fire

- Activity Based indoor air sampling conducted at child and adult level
- Measured in ug/m³

2. Description of the visible damage due the incident, including whether fire ash was observed on the property

Fire ash observed on exterior of property.

3. Analytical results from activity based air sampling

Metal	Action Level* (µg/m ³)	Child Analytical Data ¹ (µg/m ³) (WMF-METALS-112)	Adult Analytical Data ² (µg/m ³) (WMF-METALS-113)
Chromium (based on CrVI)	0.5	ND <0.25	ND <0.25
Copper	5.0	ND <0.25	ND <0.25
Magnesium	7.0	0.442	0.314
Zinc	120	ND <0.25	ND <0.25

Notes:

ND = Analyte not detected above method detection limit

CrVI = Hexavalent Chromium

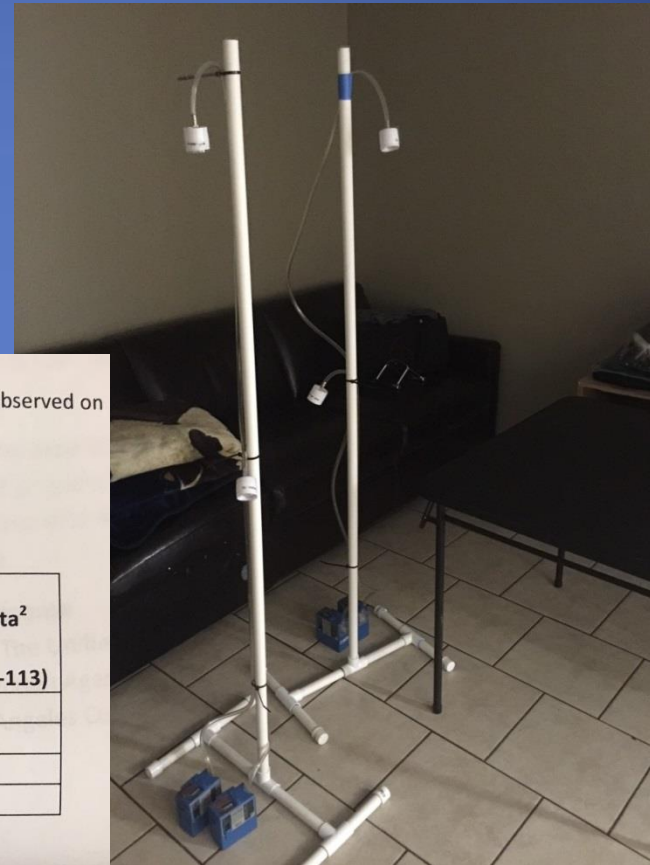
ug/m³ = micrograms per meter cubed

* site specific re-occupancy level

¹ = sample collected from 3-feet above floor

² = sample collected from 5-feet above floor

4. Analytical results from micro-vacuum dust sampling



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- Micro-Vac testing: Public Health.
- Measured total chromium based on chrome VI, copper, zinc and magnesium as an indicator.



ug/m³ = micrograms per meter cubed

* site specific re-occupancy level

¹ = sample collected from 3-feet above floor

² = sample collected from 5-feet above floor

4. Analytical results from micro-vacuum dust sampling

Metal	Action Level* (ug/m ²)	Analytical Data (ug/m ²) (WMF-VAC-215)
Chromium (based on CrVI)	1,100	1.66
Copper	15,000	ND <0.075
Magnesium	97,000,000	9.7
Zinc	117,000	ND <0.075

Notes:

ND = Analyte not detected above method detection limit

CrVI = Hexavalent Chromium

ug/m² = micrograms per meter squared

* site specific re-occupancy level

5. Any clean-up or other risk-mitigation measures completed
Ash Cleanup Assessment Team (ACAT) signed off on outdoor cleanup of property on 7-02-16.



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Homes and properties cleaned to ensure safety of the residents. Not all homes were cleaned (interior), but all homes on the north side of 52nd St. were tested. If test results were below action levels, cleaning was not necessary.



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Community Outreach and
Media



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“Community Fair” for
Maywood Residents.

All Agencies available to
answer questions .



Fruitland Maywood Magnesium Explosion/Fire

Most asked question:

“Why was I let back into my home and across the street they are kept out and cleaning their yards and homes”?



Fruitland Maywood Magnesium Explosion/Fire

- Fire debris at facility covered with soil sealant and filter fabric to prevent Ash and dust from re-contaminating surrounding properties.
- The chain link fence was erected at front of property and also covered with a textile barrier.
- 24 hours security at site.



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Current Status of Site

- EPA began removal action on 10/17/2016.
- EPA will work with the California Department of Resources Recycling and Recovery (CalRecycle) to remove non-hazardous materials (debris and scrap metal).
- All hazardous waste will be separated and transported to an EPA-approved facility for disposal.
- Air monitoring will be conducted throughout the cleanup to ensure contaminants at the site do not pose health risk to surrounding community.
- Projected to take 8 weeks and cost up to \$3 M.

Lessons Learned

- Community engagement/outreach to keep residents informed and address their concerns has to be a top priority. The success of the response will be judged by public perception more than technical benchmarks.

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NFPA placard
indicating water
reactive may
have avoided
the explosion
and resulting
“near miss”.

