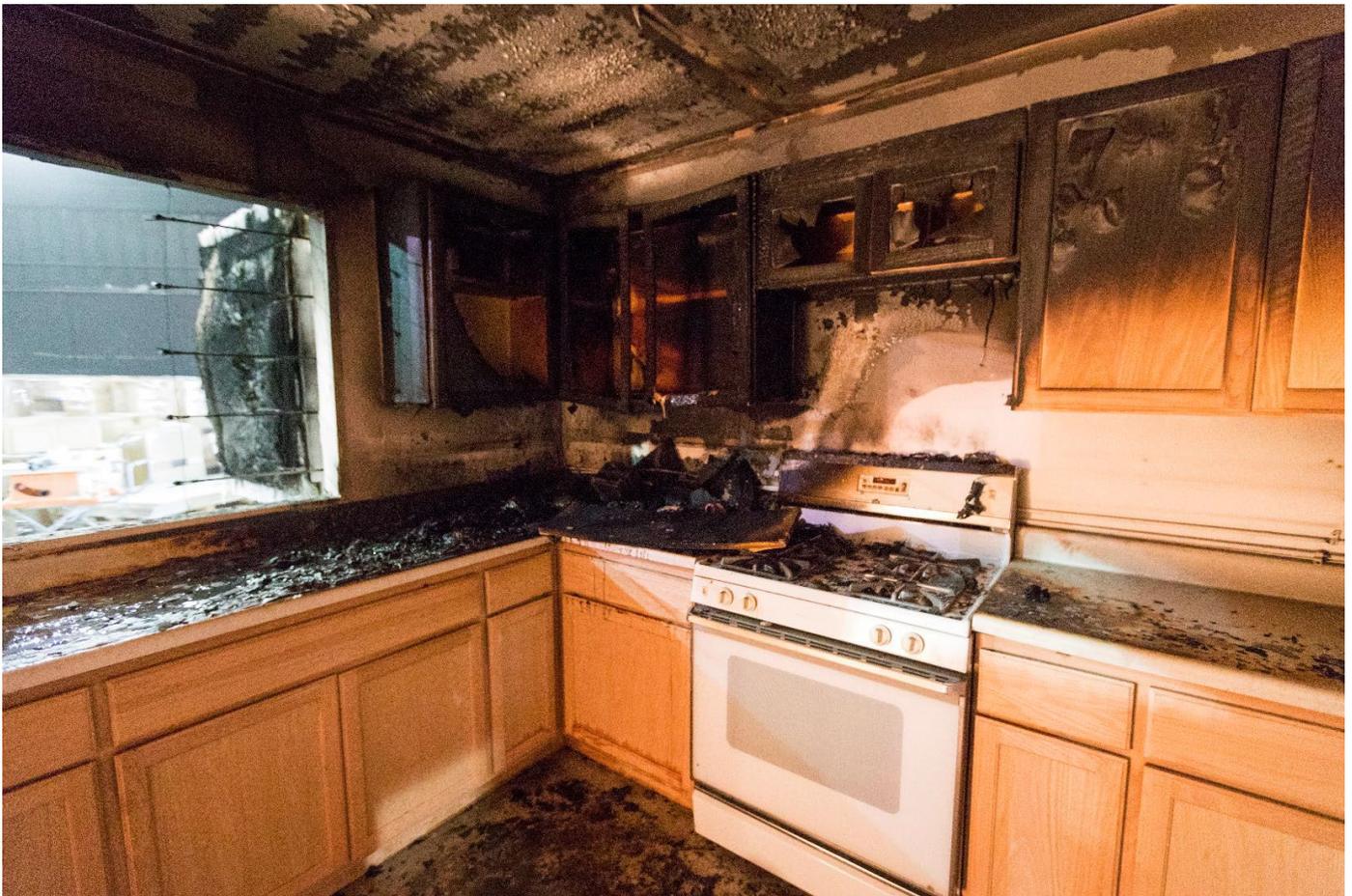


Investigate the Mystery

your first solo investigation

Now it's time to put your evidence gathering skills to the test!

Where did the fire start? What caused it? Work your way through the burned structure to seek out every piece of evidence needed to determine the fire's place of origin and cause.



Using the evidence you gather, make a claim about the origin of the fire. Use evidence you observed in the kitchen and scientific reasoning to tell the story of what you think happened in the kitchen.

Investigator's Notebook of Evidence

Evidence Collected: 17

Evidence sent to lab: 4

Evidence

Fire Officer Report

The homeowner said that the family left for the day, and when the children returned from school they found the house full of smoke. They did not go in. They closed the door and went to a neighbor's house to call the fire department and their parents.

The fire department arrived and found a smoldering fire in the kitchen. The fire crew reported the fire damage is limited to a section of the kitchen. The other rooms in the house only have smoke damage.

The house had plenty of fuel, so it appears that the fire ran out of oxygen with the doors and windows closed.

Add to notebook +



Evidence

Glass Carafe

OBSERVABLE EFFECT

Mass Loss

Deposition

Discoloration

The handle from the coffee carafe appears to be melted off due to high heat transfer. There is heavy soot deposited on the glass. Some discoloration of the glass is observed.

How does this help identify how heat was transferred to the item? And how close it was to the fire?

Add to notebook +

Ignore evidence x



Evidence

Countertop (left)

OBSERVABLE EFFECT

Deposition

Mass Loss

There is a visible pattern of damage. The amount and depth of char increase as you move toward the corner.

How does this indicate how the fire spread through the room?

Add to notebook +

Ignore evidence x



Evidence

Outlet

OBSERVABLE EFFECT

Discoloration

Deposition

Char and soot are visible on the outlet. There are wires still plugged into it. The investigator checked the circuit breaker, and determined it did "trip", shutting off the power to the outlet. We cannot know when the outlet tripped. What was it connected to? We may need to send this to the lab for more analysis.

Send to lab



Lab Results

Outlet

OBSERVABLE EFFECT

Discoloration

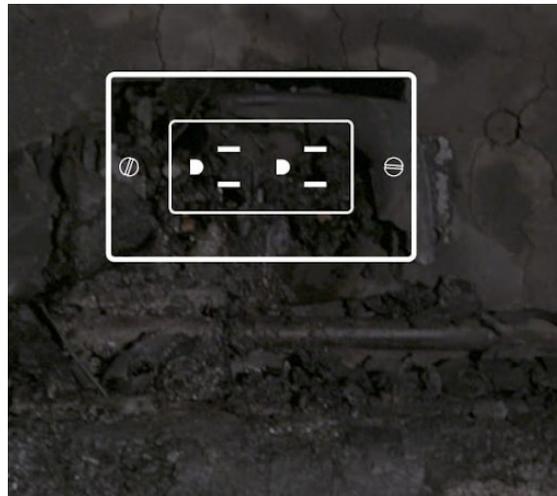
Deposition

X-ray from the lab showed that the wire connections appear ok. This is evidence that no electrical arcing occurred.

If the fire started here, are all parts of the fire tetrahedron present? How can you tell?

Add to notebook +

Ignore evidence x



Evidence

Gas Stove

OBSERVABLE EFFECT

No Deposition

This is a gas stove. The stove is metal. Knobs on the gas range are in the off position. There is no soot deposited on the surrounding metal.

How does this help identify how heat was transferred to the item? And how close it was to the fire?

Add to notebook +

Ignore evidence x



Evidence

Clock

OBSERVABLE EFFECT

Deformation

No Deposition

There is a melted clock on the gas range. Note that it got hot enough to melt, but did not burn.

How does this help identify how heat was transferred to the item? And how close it was to the fire?

Add to notebook +

Ignore evidence x



Evidence

Charred Mass of Electronics

OBSERVABLE EFFECT

Mass Loss

Deposition

There is a large melted mass of plastic plugged into the outlet – it turns out to be a wireless switch. It looks like an appliance was plugged into it.

Send to lab →



Lab Results

Charred Mass of Electronics

OBSERVABLE EFFECT

Mass Loss

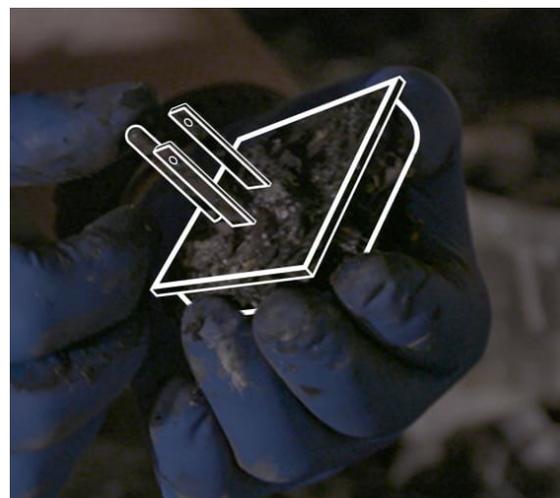
Deposition

Undetermined whether it was "on" or "off" so we cannot tell if power was running to any connected appliances.

If the fire started here, are all parts of the fire tetrahedron present? How can you tell?

Add to notebook +

Ignore evidence x



Evidence

Countertop

OBSERVABLE EFFECT

No Discoloration

No Deposition

No Mass Loss

The countertop to the right above the stove does not have any visible char or damage. There is also very little soot on the counter.

How does this indicate how the fire spread through the room?

Add to notebook +

Ignore evidence x



Evidence

Upper Cabinet

OBSERVABLE EFFECT

Mass Loss

Deposition

The wall cabinet has been burned so much that it collapsed. The damage suggests high amounts of heat transfer to the cabinet and that it was consumed as fuel.

How does this help create a timeline of what burned first, second, last?

Add to notebook +

Ignore evidence x



Evidence

Burned Potato Chips

OBSERVABLE EFFECT

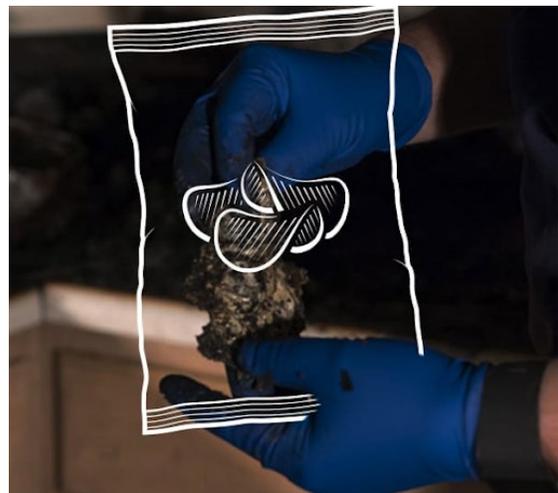
Mass Loss

There are some burned potato chips and a piece of the potato chip bag on the counter. The rest of the chips and bag were likely converted to fuel. The counter under the bag is protected from damage due to heat transfer. The homeowner tells you that there were potato chips stored in the cabinet above.

How does this help create a timeline of what burned first, second, last?

Add to notebook +

Ignore evidence x



Evidence

Coffee Maker

OBSERVABLE EFFECT

No Mass Loss

The heating element is embedded in melted plastic. The coffee maker appears to have been plugged in. The homeowner told you they had a busy morning but did make a pot of coffee.

If the fire started here, are all parts of the fire tetrahedron present? How can you tell?

Send to lab



Lab Results

Coffee Maker

OBSERVABLE EFFECT

Mass Loss

It was determined that the power switch on the coffee maker was in the "on" position. The coffeemaker was an older model without thermal overheat protection.

Add to notebook



Ignore evidence



Evidence

Toaster

OBSERVABLE EFFECT

Deposition

Deformation

A toaster is directly plugged in to a wall outlet. Soot is deposited on the outside of the metal toaster. The metal has bent from exposure to heat.

Send to lab



Lab Results

Toaster

OBSERVABLE EFFECT

Deposition

Deformation

Power switch was in the "off" position.

If the fire started here, are all parts of the fire tetrahedron present?
How can you tell?

Add to notebook +

Ignore evidence x



Evidence

Lower Cabinets

OBSERVABLE EFFECT

Deposition

Mass Loss

There is no evidence of heat transfer on the lower cabinets. All damage appears to be on the counter or above. Heavy soot and char are visible deep into the countertop.

How does this indicate the direction that hot gases flowed during the fire? How was heat transferred??

Add to notebook +

Ignore evidence x



Evidence

Line of Demarcation

OBSERVABLE EFFECT

Deposition

There is a visible pattern of damage. The amount of soot deposited on the wall appears to increase as you move closer to the corner.

How does this indicate the direction that hot gases flowed during the fire?

Add to notebook +

Ignore evidence x



Evidence

Protected Area

OBSERVABLE EFFECT

No Deposition

A protected area is visible when you remove the coffee maker remains. No heat was transferred to this area.

How does this indicate how the fire spread through the room?

And how heat was transferred?

Add to notebook +

Ignore evidence x



Evidence

Line of Demarcation (thermal plume)

OBSERVABLE EFFECT

Deposition

Mass Loss

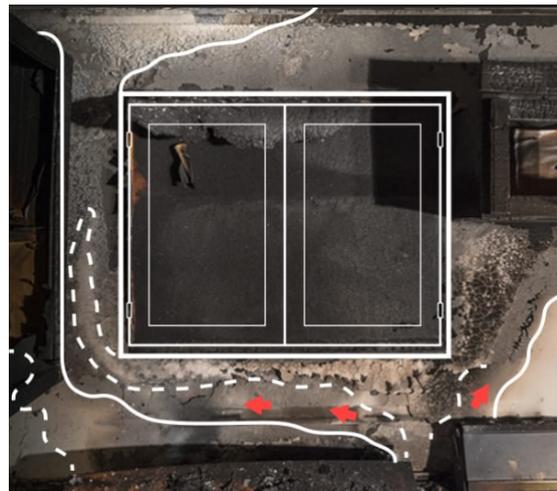
Discoloration

There is a V-shaped pattern on the wall. Soot and ash are left on the wall around where the cabinet was located. It appears to show where the smoke traveled.

How does this create a timeline of what burned first, second, last?

Add to notebook +

Ignore evidence x



Evidence

Countertop (right)

OBSERVABLE EFFECT

No Deposition

No Discoloration

No Mass Loss

The countertop to the right above the stove does not have any visible char or damage. There is also very little soot on the counter.

How does this indicate how the fire spread through the room?

Add to notebook +

Ignore evidence x

