

Carbon Monoxide Cases Investigated

by Thomas L. Liston, P.E., Mechanical Engineer

Case: Young woman died of carbon monoxide in her sleep in living quarters located over a boiler room. The room housed two Laars & Jandy Model EHE350NB pool heaters, one of which was found creating massive carbon monoxide. 2007

Case: Young woman was injured by carbon monoxide while living in a very small (256 sf) cottage. Questions was, "Which was the source: Hot water heater in a small enclosure having no combustion air vents? or a gas range pilot light having a CO measurement of 135 ppm 3 feet above the flame?" P.G. & E. measured CO both at the stove and in the water heater enclosure. Then the structure and components were destroyed before I was engaged. My modeling calculations showed that either source could have been responsible.

Client: Paul Van Der Walde of Sunnyvale, Ca.

Side: Plaintiff 2007

Case: Furnace in single story ranch home created heavy carbon monoxide which entered home, causing severe brain damage to 5-year old boy.

Results of Investigation: Two causes were found. First, faulty gas valve in furnace allowed gas pressure to be un-regulated, resulting in over-firing and consequent creation of carbon monoxide. Second, a defect in flue located within blower suction compartment of Amana Model GC1C090CX50 downflow furnace allowed carbon monoxide to enter home. Problem with White-Rodgers Model 36E22-203 gas valve was found to have improper factory-installed springs which led to a tendency to hang up wide open.

Client: Beyer, Pongratz & Rosen of Sacramento, attn: Erik Child, Esq.

Side: Plaintiff. 2004

Case: Husband and wife in up-scale mountain vacation home in Idaho were seriously poisoned (but survived) by carbon monoxide generated by the home's high-efficiency water heating/space heating unit.

Results of Investigation: General contractor had retrofitted exhaust flue incorrectly, causing flue to be blocked by trapped condensate. Carbon monoxide sensing system had been set to increasingly higher set points to avoid listening to alarm.

Client: Ringert Clark Chartered Layers of Boise, Idaho, attn: David Claiborne

Side: Defense of installing contractor. 2004.

Case: Stanford star badly damaged by a wall furnace in rented San Francisco apartment.

Results of Investigation: Blockage within heat exchanger caused flame roll-out, creation of carbon monoxide, and spillage to occupied space.

Client: Law office of Linda Ross of San Francisco

Side: Plaintiff. 2003

Case: A 25 year old bachelor from Korea living in a one-story two-bedroom rental house in Los Angeles died in his sleep from an un-vented 32-year old gas-fired wall heater.

Results of Investigation: Broken ceramic piece created improper combustion, resulting in carbon monoxide creation. Surprise was that bedroom window was wide open yet death resulted anyway.

Client: Carol Knoblow, Esq. of Nelsen, Thompson, Pegue & Thornton of Santa Monica.

Side: Defense of home owner. 2003

Case: A husband, wife and wife's mother were in an apartment in a two-story apartment building in San Leandro. The apartment was immediately over a boiler room. The husband died; wife and mother survived. Wife had complained weeks earlier. Gas company had then red-tagged for two problems: a blockage within heat exchanger and a leaking stem of the gas shut-off valve. Repair contractor fixed valve but ignored blocked heat exchanger. Contractor did not hold correct license.

Results of Investigation: Settled for \$2,550,000.

Client: Frank S. Moore, Esq. of Moore Law Office, San Francisco

Side: Plaintiff. 2003/2004

Case: A young, newly married and pregnant couple living in a two-story apartment building in Panorama City were hit by carbon monoxide from their 30+ year old gas-fired wall heater. The wife had visited her doctor, complaining of headaches; but the diagnosis of carbon monoxide was missed. The couple went to sleep watching TV. The wife never awoke.

Results of Investigation: Multiple gas company men and at least one private serviceman visited the scene and did whatever they did. Their reports and my observations and tests could never be reconciled. The reason for the creation of carbon monoxide was never identified. A firing rate twice what I measured was reported by the gas company man. The rate I measured was only 67% of what the nameplate had. The flame appeared normal to me (and to other experts). A problem with the flue was initially reported, but even when I totally blocked the flue, the heater would not generate CO. Client: Marlin Howes, Esq, of Sempra Energy Law Department

Side: Defense of Southern California Gas Company. 2003

Case: Two women staying in a 30-year old beach resort motel heated with gas-fired wall heaters were poisoned by carbon monoxide, as verified by hospital blood tests. They survived.

Results of Investigation: Improper flue and tight construction features combined to starve heater, resulting in carbon monoxide creation. Heavy soot in flue confirmed diagnosis. Flue top was not an approved type. Height of flue cap above roof was inadequate. Height of flue above heater was inadequate. It is and was interesting that the same condition prevailed in about 15 other like motel rooms, all since initial construction, with this being the first time the problem was identified.

Client: Darlene M. Ball of Borton, Petrini & Conron, LLP of San Luis Obispo

Side: Defense of motel owner. 2002

Case: 22 vacationers in an up-scale rental house at Zephyr Cove, Lake Tahoe, Nevada were hospitalized from carbon monoxide created by a Lennox high efficiency furnace located in a basement/crawl space.

Results of Investigation: Flue was blocked by dead birds. Serviceman repeatedly replaced warning device rather than remove birds. Flue repair using electrical tape rather than PVC coupling allowed products of combustion to spill into crawl space. CO then migrated to entire house.

Client: Tom Beko of Erickson, Thorpe et al of Reno.

Side: Defense of house owner. 2000

Case: A sailor, his wife and three children were hit by CO in their Navy Housing at NAS Meridian, Mississippi. All died except the mother, who barely survived. Gas fired furnace was initially presumed to be source. Previous CO exposures had happened in the same type of houses at the base in years past; all in-depth investigations came up empty of explanations.

Results of Investigation: I am of the opinion that an idling automobile in an adjacent carport was the far more likely source of CO than was the furnace.

Client: Tim Moore of Currie, Johnson et al of Jackson, Mississippi.

Side: Defense of HVAC maintenance contractor. 2000.

Case: Baby with severe birth defects as a result of CO poison.

Results of Investigation: Riverside tract home had flue problems for hot water heater &/or with gas clothes drier. Liston consulted only as to likelihoods.

Client: Friedenthal, Cox & Heskovitz, LLP of South Pasadena, attn Dan Friedenthal. 2000

Case: Two young girls from India were overcome by CO in their Berkeley apartment, which was heated by a wall furnace. One died. Feb. 2000
Results of investigation: Heater flue was blocked by re-roofing debris, and flue had been re-installed criminally by roofer. Girls operated heater with all windows shut.
Client: Todd Jones, Esq, of Archer Norris of Walnut Creek.
Side: Defense of prior owner. 2000

Case: Young couple in small rented cabin in Santa Cruz Mountains was found overcome by carbon monoxide after being unconscious for several days. They spent several more days unconscious in hyperbaric chambers in Monterey. Amazingly, they appear to be none-the-worse for their experience today!
Results of Investigation: Propane fired wall heater, hot water heater, stovetop, oven and refrigerator all checked out blameless. I was stumped. I took the refrigerator to my facility and tested it for days but found it to be working perfectly. Then homeowner's wife then spotted a propane refrigerator recall in local paper. I confirmed with Servel Company that they were recalling all Servel propane refrigerators manufactured between 1933 and 1957 because of 13 confirmed deaths therefrom. The subject refrigerator was one of them.
Client: Timothy Volkmann of Law Firm of Gasset, Perry & Frank of Santa Cruz. 1997

Case: Young couple and three children were nearly overcome by carbon monoxide in their rented apartment in San Jose. Barely conscious father was able to identify problem and save family. Source of CO was double-outlet gas-fired wall heater, Narrowall Model 50D by Holly General, a division of Siegler Corp. Cause of CO was a dirty burner &/or an obstructed venturi.
Client: Veronica Rendon of Murphy, Pearson, et al of San Francisco. 1997.

Case: One adult died; two adults and two children survived several days of CO poison before being discovered in apartment in Milpitas served by a natural gas-fired wall heater.
Results of Investigation: Wall heater's burner was clogged with debris, causing carbon monoxide to form. The combined system of house/burner/flue was unable to remove products of (incomplete) combustion.
Client: Russell A. Robinson, Esq, of Law Office of Richard Werthimer of S.F. 1996

Case: Up-scale couple had just bought small, older cabin at Big Bear Lake. When they failed to appear for work on Monday, co-workers called real estate agent. Agent went to house, saw couple on floor, and broke in, saving the wife's life but not the husband's. Miraculously, wife appears to be O.K. even though unconscious for days!

Results of Investigation: Wall heater heat exchanger was found to be badly clogged with soot. Flue was found to work well with open window but was found to reverse flow when windows were shut and fire was in fireplace. Clogged heat exchanger was verified to create CO, and reversal of flow in flue due to fire in fireplace was shown to put CO into living space.

Client: Scott Houtz, Esq. of Law Office of David H. Greenberg of Beverly Hills 1996.

Case: Elderly couple, tenants in S.F. Housing Authority apartment, died of carbon monoxide poison.

Results of Investigation: Couple used stovetop burners to heat apartment, killing themselves. Need for unorthodox heat was found to be due to clogged hot water baseboard heaters. Clogging was due to debris and lack of maintenance.

Client: Jacob Burland, Esquire 1995

Case: Nurse in medical doctor's office claimed that her unborn child was brain damaged due to carbon monoxide from rooftop air conditioning unit.

Results of Investigation: History of service verified that rooftop "gas-pack" type air conditioner adjacent to unit serving space created carbon monoxide. Study of heat spots, of service clean-out, of improper filter arrangement, and of prior fresh air intake indicated that either the carbon monoxide of the adjacent unit and/or the discharge from dentists' vacuum unit could have been blown into space occupied by nurse.

Client: Eugene A. Brodsky, Esq. of Miller, Brodsky & Baskin of S.F. 1995

Case: Wife died but husband survived unharmed when overcome by CO in small rented house in San Francisco.

Results of Investigation: Natural gas wall heater had been improperly overhauled by landlord. Heat exchanger slipped out of correct position, resulting in inadequate venting.

Client: Michael C. Miller, Esquire. 1994

Case: TV station executive almost died from carbon monoxide in his small, rented older house in San Jose.

Results of Investigation: Found that flue serving small, floor-standing living room heater was missing the bottom of outdoor tee. Cause became evident in the first 10 minutes of investigation, being almost identical to cause of Besag death (described below). It stood the hair on my neck straight up!

Client: Karin A. Poire, Esq. of Sedgwick, Deter, Moran & Arnold of San Francisco. Feb. 1993.

Case: Peter Besag, PhD, died from carbon monoxide in his 3-story studio apartment. His girl friend was hospitalized but survived. A month or so later, his brother almost died in the same place from the same cause.

Results of Investigation: Found that flue serving propane furnace and hot water heater was missing a plug from the bottom of a tee. Illustrated cause and effect by firing system with canary in living quarters. Canary died.

Client: Jacques Adler, Esq., of San Francisco. 1992

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