THE CITY OF SAN DIEGO

M E M O R A N D U M

DATE: August 14, 2018

TO: Willy Melendez, Battalion Chief, Training Division

FROM: Kurtis Bennett, Firefighter, CAPP Program Manger

SUBJECT: Asbestos/Lead at NTC Training Facility

Issue:
According to the City of San Diego, Asbestos and Lead Management Program (ALMP) report (attachment #1), buildings 71, 72, 88, and 89 at NTC contain the following Asbestos Containing Materials (ACM)

- 9x9 vinyl asbestos tiles (VAT) used as flooring
- Mastic adhesive used to secure VAT
- Portions of Thermal System insulation used to insulate pipes

ACM has been disturbed because of firefighter training activities including live-fire exercises. Disturbed ACM poses a health and safety risk to firefighters.

An additional hazard includes lead glazed ceramic wall tiles in building 71, where live-fire exercises were conducted.

Asbestos Background:
Asbestos is the name given to a group of six different naturally occurring fibrous materials (HHS, 2001). Asbestos fibers do not have any detectable odor or taste, do not dissolve in water or evaporate, are resistant to heat, fire, and/or biological or chemical degradation (HHS, 2001). As a result, asbestos has been widely used in a variety of industries, including: automobile, construction, manufacturing, power, and chemical industries (Mauney, 2018). Asbestos usage grew dramatically during the industrial revolution, peaking in the United States in 1965 (Rosner, Markowitz, 1989). In 1989, the EPA banned all new use of asbestos (HHS, 2001).

New asbestos use was banned in the United States as result of an ever-increasing body of evidence that demonstrated a causal link between asbestos exposure and cancer in humans and public pressure resulting from successful litigation on the part of injured workers (Mauney, 2011). Asbestos is classified by the department of Health and Human Services, Environmental Protection Agency, and International Agency for Research on Cancer as a known human carcinogen (HHS, 2001).

The primary route of exposure to asbestos is inhalation, as small asbestos fibers are inhaled into the lungs and become deeply embedded (HHS, 2001). Retaining embedded asbestos fibers in the lungs can result in numerous disease states. The first is scarring (pulmonary fibrosis) of the lungs resulting in asbestosis, a condition that causes decreased pulmonary gas exchange and can lead to serious disability and/or death (HHS, 2001). Workers exposed to asbestos are also at increased risk of developing lung cancer and mesothelioma (cancer of the pleural lining), both of which have long latency periods and poor survival rates (HHS, 2001). Limited evidence suggests that workers exposed to asbestos may also be at increased risk of developing other forms of cancer, including: stomach, intestines, esophagus, pancreas, and kidneys (HHS, 2001).

When considering risk and ACM, it is important to understand the difference between friable and non-friable asbestos. Friable ACM is any material that contains more than one percent asbestos by weight or area and can be crumbled, pulverized, or reduced to powder by the pressure of an ordinary human hand (SWS, n.d). Friable asbestos is dangerous to human health because it releases toxic fibers into the air (SWS, n.d.). Examples of friable ACM include: pipe/heating duct insulation, flexible connections for ventilation ducts, attic and wall loose insulation, acoustical and decorative platers/ceilings, sprayed on fire-proofing and more (SWS, n.d.).

Non-friable ACM cannot be pulverized under hand pressure and when left undisturbed and maintained in a state of good repair poses little risk to human health (SWS, n.d.). Examples of non-friable ACM include: asphalt roofing shingles, cement siding, gaskets, vinyl floor tiles, and mastic (SWS, n.d.). Non-friable asbestos including VAT and asbestos containing mastic can become friable when subjected to: cutting, drilling, grinding, scraping, renovating, demolishing, maintenance, housekeeping, and/or any other activity including destructive firefighter training that creates dust (SWS, n.d.).

NTC Discussion:
In the late 1990's the City of San Diego took possession of NTC and the San Diego Fire Department (SDFD) re-purposed the facility as a firefighter training facility. Disclosures related to NTC are evidence of an awareness by the City of San Diego of the potential presence of asbestos, lead and other hazardous materials throughout NTC (Attachment # 2).

At the time NTC was relinquished to the City of San Diego, the buildings were in a state of good repair, having been maintained by the US Navy. Since that time building maintenance has been deferred and firefighters have engaged in destructive training activities and live-fire exercises throughout the facility, resulting in extensive disruption of the following ACM: VAT, mastic adhesive used in conjunction with VAT, and pipe insulation

Building 71:
17,734 square feet. Constructed in 1956. This building was used for live-fire training. Asbestos containing thermal system insulation (TSI) inside the building has been extensively disturbed. Additionally, ceramic wall tiles in the bathrooms with a lead glaze have been exposed to high heat resulting in visible discoloration and damage. When exposed to high-heat, Lead-glazed tiles in a live-fire training area have the potential to liberate lead fumes. According to the United States Department of Labor, Inhalation of airborne lead vapors is generally the most important source of occupational lead exposure (DOL, 1991). Effects of

exposure to lead often show no sign of immediate disease, rather lead is absorbed in your tissues and can slowly cause irreversible damage to numerous body systems (DOL, 1991).

Building 72:
17,734 square feet. Constructed in 1954. This building was used for destructive firefighter training. Throughout the building there is asbestos containing mastic on the floors.

Buildings 88 & 89:
90,567 square feet each. Constructed in 1967. Throughout these buildings VAT are broken and pulverized and asbestos containing mastic is exposed.

SCBA Compressor Room:
Broken VAT and exposed asbestos containing mastic on the floor. According to Bauer Compressors technical support, breathing air compressors do not filter asbestos and compressors should not be housed in an area where disrupted asbestos is present (Attachment #3).

The SDFD has been aware of the hazard posed by VAT and asbestos containing mastic since 2002, as evidenced by an abatement notification emailed to the SDFD Training Division (Attachment #4). The abatement in 2002 was limited to 1200 square feet in building #88.

Between 2002 and 2015, there are anecdotal reports of additional professional abatement. However, no evidence of such abatement has been found at the time of this writing. There is evidence of do-it-yourself abatement in numerous areas.

In 2015, Firefighter (FF) Kevin Pendleton resigned from his position as a Fire Academy Instructor at NTC over asbestos concerns (Attachment #5). Based on FF Pendleton's concerns, limited abatement was again undertaken in numerous areas where VAT were chipped and asbestos containing mastic was exposed. In addition to FF Pendleton's documented concerns, other Academy staff and personnel assigned to NTC have expressed concerns about the safety of the buildings between 2002-2015. Specifically, Captain Mike DeGuzman and retired Captain Mark Mastergeorge reported to me that they had expressed their concerns to leadership.

There is no available evidence of thermal system insulation (TSI) abatement in building #71 (live-fire building) in either 2002 or 2015. TSI (pipe insulation) in buildings constructed prior to 1980 is a presumed asbestos containing material (PACM) unless proven otherwise by laboratory analysis (Quealy, 2011). ALMP Inspector Robert Cox has identified various areas of disturbed asbestos containing TSI in building #71. According to the California State Fire Marshall (CSFM), all ACM's must be removed from acquired structures when conducting live-fire training (CSFM, 2008). All ACM's were not removed from building #71 prior to live-fire training.

Based on the available information and physical inspection it appears that the asbestos abatement strategy at NTC over the years was to target specific problem areas as they arose, as evidenced by targeted abatement in both 2002 & 2015. While this approach addressed the issues at the time, the root cause was not addressed. The root cause of the continuing asbestos problem at NTC is that firefighters engage in destructive training throughout the

facility, damaging VAT, scraping asbestos containing mastic by crawling and dragging heavy tools across floors, and otherwise continually disturbing ACM.

Recommendations:
Ensure a Safe Training Environment

- Based on the limited success of past abatement efforts and the necessity to continue destructive firefighter training, the following options are recommended.

Option #1

- Abate all ACM and other hazards in select buildings/spaces at NTC where destructive training is conducted and engage in targeted abatement in select areas used for non-destructive activities
    - Priorities will be guided by a yet to be received quote for abatement services
        - Permanently seal off buildings/spaces not abated

    - **Priority spaces for total abatement/destructive training areas**
        - 88B second floor
            - Total abatement, destructive firefighter training activities
        - 88B third floor
            - Total abatement, destructive firefighter training activities
        - Air compressor room
            - Or consider compressor relocation
        - Stairwell areas
            - In all active stairwells
            - Debris on stairwells is an Air Pollution Control District (APCD) violation per ALMP

    - **Priority spaces for targeted abatement/non-destructive training areas**
        - 89A first floor
        - 89A second floor
        - Establish a routine floor maintenance waxing program for remaining VAT in all occupied spaces including building 680
            - VAT require waxing and ongoing maintenance to ensure asbestos fibers are not released (Rancho, n.d.)

    - **Identify building/spaces currently empty/near empty for total abatement**
        - Reduced costs, no prop removal prior to abatement
        - Potential empty/near empty spaces to be considered
            - 88C first floor
            - 88A second floor
            - 88A third floor
- Upon receipt of the abatement quote from GGG Demolition, an informed cost/benefit analysis related to abatement can be made

- Costs for additional buildings/spaces can be generally extrapolated from quotes provided

Option #2

- **Purchase a modular Conex based training facility (Attachment #6)**
  - Conex based systems are portable and specifically designed for live-fire and destructive firefighting training activities
    - Reduced labor costs to run live-fire training exercises due to multiple redundant safety systems and automation
    - Air-scrubbing technology is environmentally friendly
      - No toxic discharge/smoke
    - Installed in six months start to finish
      - Existing courtyard areas have power, drainage, and water supply
    - When training center is ultimately moved, Conex based system can be moved to the new facility
  - Exact quotes require a site visit by vendor to assess infrastructure and other preparatory needs

Option #3

- **Cease all destructive training at NTC and contract with regional municipalities/colleges to conduct destructive firefighter training at purpose-built facilities**
  - Chula Vista
  - Rancho Santa Fe
  - Miramar FD
  - Poway
  - Heartland
  - Miramar College

Administrative

- Acknowledge past missteps on the part of SDFD
  - SDFD was aware of the hazards associated with the buildings at NTC since at least 2002
  - Every SDFD firefighter for the previous two decades has spent literally hundreds of hours training in the buildings at NTC
  - Employee concerns about environmental safety at NTC were not addressed properly
    - Spot abatement over the years provided only short-term solutions in very specific areas
    - Training continued throughout the facility in areas with disturbed ACM for decades
- Revise current administrative oversight to ensure the workforce is not unnecessarily exposed to workplace hazards in the future
- Commit to transparent communications with the workforce about potential environmental hazards in the workplace

Medical Surveillance and Coverage for Future Illness

- Monitor all SDFD Firefighters (all ranks) that trained in buildings at NTC for adverse health effects associated with asbestos and/or lead exposure
- Provide 100% medical coverage for life for all SDFD Firefighters (all ranks) that develop any disease that could have resulted from exposure to asbestos and/or lead

Attachments: 1. ALMP Report (not received at time of writing)
2. NTC hazards lease disclosure
3. Bauer Compressors technical information/asbestos
4. 2002 NTC asbestos abatement
5. FF Kevin Pendleton Fire Academy Resignation/asbestos
6. Bullex Conex based training

Kurtis Bennett

Program Manager/Cancer Awareness & Prevention Program

KB/kb

References

Health & Human Services (HHS) (2001) *Public Health Statement Asbestos*, CAS # 1332-21-4. U.S. Department of Health & Human Services

Mauney, M. (2018) *History of Asbestos*. Retrieved from: https://www.asbestos.com/asbestos/history/

Quealy, B. (2011) Which Buildings Require Asbestos Testing Prior to Renovation/Demolition? Retrieved from: http://www.terracon.com/wp-content/uploads/2011/03/Which-Buildings-Require-Asbestos-Testing.pdf

Rancho Santiago Community College District (Rancho) (n.d.) Guidelines for Stripping Asbestos-Containing Floor Coverings. Retrieved from: https://www.rsccd.edu/Departments/Risk-Management/Documents/Safety/Guidelines%20for%20stripping%20astestos%20floors.pdf

Rosner, D., Markowitz, G. (1989) *Dying for Work, Workers' Safety and Health in Twentieth-Century America.* Indiana University Press.

Solid Waste Services (SWS) (n.d.) *Friable vs. Non-Friable*. Retrieved from: https://www.solidwasteservices.net/PDF/asbestos.pdf

State Fire Training (2008) Fire Control 3A Course Guide, Structural Firefighting in Acquired Structures. Office of the State Fire Marshall

US Department of Labor (DOL) (1991) Occupational Safety and Health Standards. Retrieved from: https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10031