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Fires in animal housing facilities

Background: NFPA 150, Fire and Life Safety in Animal Housing Facilities Code, establishes life and safety requirements for both humans and animals in all types of animal housing facilities where animals are kept for any purpose, including barns, stables, kennels, animal shelters, veterinary facilities, zoos, laboratories, and racetracks. The Technical Committee on Animal Housing is responsible for developing the language in the standard and identified there is a lack of a single database of fire events in animal housing facilities, which would show the numerous fires that have occurred and their impacts to the animal industry. This database will provide more exposure of facts and the benefits to using NFPA 150.

Project Goal: The objective of this project is to collect and analyze information on the cause of fires, fire losses (animal deaths and financial loss), and fire protection features (such as fire suppression, detection, etc.) of animal housing facilities through a comprehensive review of literature, U.S. news media reports (2020-21) and an online information collection effort through a questionnaire survey.

Summary Observations:

The data collected and reviewed from these three sources provided the following observations.

Review of published literature data revealed the leading causes of animal housing fires to be from heating devices and malfunctioning of electrical systems. This was further reinforced by the survey questionnaire responses which reported heating devices were responsible for 33% of all reported fires collected through this study, followed by malfunctioning electrical systems (29%).

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Further, papers reviewed from the literature reported that winter months harbored a greater number of fires as compared to other seasons. Both AWI's *Barn Fire* and The Humane Society International's *Untold Suffering* reports concluded colder months to have larger number of fires due to facilities using more heating systems or electrical equipment. This was also observed in the incident data collected in this study from U.S. based news media reports for 2020-21 period, which showed February as the month with largest number of incidents reported.

The financial loss due to these fires were also reviewed from the data available in literature. A prior report from NFPA estimated the costs of these animal housing structure fires from the years 2014-18 to be \$37 million. The online questionnaire responses in this study indicated similar magnitude of financial losses.

The questionnaire survey responses revealed the lack of awareness about fire and life safety standards applicable to animal housing facilities such as NFPA 150, Fire and Life Safety in Animal Housing Facilities Code. The open-ended responses collected from respondents suggested an opportunity to create training outreach program and other fire protection training to better educate animal housing facility owners and staff.

Below is a compiled list of recommended fire protection features gathered from the literature review: sprinkler systems, fire extinguishers, smoke detectors, heat detectors, carbon monoxide detectors, fire doors, emergency exits for animals/people, lightning rods, and having permanently installed electrical systems in the facility. The routine inspection of electrical systems as well as annual inspections of the facilities were also recommended. Further, need for routine fire drills and employee training was emphasized.

It is noted that less data was available and collected from the zoo and aquarium facilities. This study recognizes the need for additional awareness outreach about standards for this section of animal housing facilities.