THE DUTCH
SAFETY BOARD

SUMMARY

Fire at Rivierduinen: assumed safety

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12 March 2011

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THE DUTCH SAFETY BOARD

The aim in the Netherlands is to reduce the risk of accidents and incidents as much as possible. If accidents or near-accidents nevertheless occur, a thorough investigation into the causes of the problem, irrespective of who is to blame for it, may help to prevent similar problems from occurring in the future. It is important to ensure that the investigation is carried out independently from the parties involved. This is why the Dutch Safety Board itself selects the issues it wishes to investigate, mindful of citizens' position of dependence with respect to public authorities and businesses. In some cases, the Dutch Safety Board is required by law to conduct an investigation.

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* Due to involvement in his capacity as director of the COT Institute for Safety and Crisis Management, professor E.R. Muller, board member of the Dutch Safety Board, has decided, pursuant to Section 15(2) opening words and (c) of the Dutch Safety Board Act, not to participate in the discussion of the investigation into the fire at Rivierduinen.

This report is published in Dutch and English. In the event of any discrepancy between these versions, the Dutch text shall prevail.

CONSIDERATION

Introduction

On 12 March 2011 a fire broke out around 21.37 hours in one of the patient rooms in the Elderly Intensive Care 4 department of the Rivierduinen psychiatric hospital in Oegstgeest. Three patients died as a result of this fire. The smoke spread quickly through a wing of the building and members of staff were soon quite powerless. They had to leave five patients behind in the burning wing of the building. Two of them died on site as a result of carbon monoxide poisoning and three patients were rescued with the assistance of the fire brigade. One of them died a few days later.

Reason for the investigation
Since the fatal fire at the Schiphol-East detention centre in 2005 (11 people died), government institutions have been paying additional attention to fire safety at institutions that accommodate people who are vulnerable or who are less able to manage on their own and who are dependent on others for their safety. After the fire at Schiphol the ministries involved launched an action programme with regard to fire in order to increase (fire) safety awareness. Communication and knowledge transfer, in particular, had to contribute towards this. The action programme ran until January 2009. The ministers came to the conclusion that the goals had been attained; the envisaged efforts had been made.

Given the serious consequences of the fire at Rivierduinen, the Dutch Safety Board wondered what could be learned from this fire in light of initiatives that have been developed in this sector following the Schiphol fire. This, after all, is the objective of the Dutch Safety Board: to learn from accidents in order to assist in their prevention in future. Against this background, the Dutch Safety Board started an investigation into the fire in March 2011.

Intermezzo: Geinsche Hof fire
On 27 June 2011, not long after the fire in Oegstgeest, a fire broke out in De Geinsche Hof, a nursing home of Zorgspectrum in Nieuwegein. More than 130 patients were evacuated and nine were admitted to hospital for some time because of smoke inhalation trauma. The Dutch Safety Board investigated this fire as well. Initially, the Dutch Safety Board began investigating the two, separate fires extensively in order to broadly highlight the topic of fire safety in care institutions. Gradually, however, the investigation into both fires showed that the issues related to the fire at De Geinsche Hof were of a different nature than those related to the fire at Rivierduinen. In De Geinsche Hof smoke spread from the location where the fire broke out to the rest of the building through ventilation channels. As a result, various departments and floors had to be evacuated simultaneously. At Rivierduinen the fire and evacuation focused on only one location: the source of the fire. During the course of the investigation the two situations and the related underlying factors were shown to be insufficiently similar to be discussed in one report. The Dutch Safety Board, therefore, decided to stop the investigation into the fire at De Geinsche Hof.

Starting principle: Risk management by care institutions
The Dutch Safety Board views care institutions as high-risk organisations: there is a high risk of a fire breaking out and the evacuation of patients or residents is made more difficult because of their physical and/or mental condition. Care institutions in the Netherlands are confronted with a (report of a) fire with some regularity. Moreover, these institutions often take care of patients or residents who are less able to manage on their own because of their physical and/or mental condition. This means that these patients rely on others for their evacuation. Dealing critically with these factors is essential for the fire safety of care institutions.

For its investigation, the Dutch Safety Board applied a risk management school of thought in which a systemic and transparent approach to risks is fundamental.[1]

1 Risk management is an integral assessment of and approach to all relevant risks.

Care institutions are themselves primarily responsible for fire safety. The institutions must provide a fire safety policy that ensures a (fire) safe stay at the institution for patients, employees and any other people who may be there. In accordance with the Dutch Safety Board, it is, therefore, essential that care institutions map risks proactively and systematically and implement measures to control these risks. Not all risks can be removed in an acceptable manner but they do demand explicit and transparent consideration. In so doing, the institution continuously strives for a risk level that is as low as possible.[2] Moreover, it is important that care institutions strive to ensure that fire cannot break out and, if it does, that the consequences for patients (and employees and other people who may be there) are as limited as possible.

Key questions of the investigation
It emerged fairly quickly after starting the investigation that the Rivierduinen psychiatric hospital complied with the requirements set by legislation and regulations in the area of fire safety.
The psychiatric hospital had the required permits for the building and the use thereof. The shortcomings in the building structure had been mapped and resolved and the psychiatric hospital had invested in setting up a company emergency response organisation. Rivierduinen had also implemented a few measures that were not legally required. It had compartmentalised the building and purchased fire-retardant mattresses (which were not actually being used in all rooms). The Instituut voor Veiligheids- en Crisismanagement (COT; Institute for Safety and Crisis Management) commissioned by Rivierduinen to investigate the fire, concluded in its report that this serious fire had taken place despite the efforts made in the area of fire safety.

Further investigations by the Dutch Safety Board consequently focused on lessons to be learned from the fire at Rivierduinen. What can this psychiatric hospital in particular and other care institutions and organisations involved in this sector in general do to further improve fire safety in the care sector?

The key questions of this investigation are as follows:

"How was it possible that the fire at Rivierduinen had such a serious outcome despite the fact that the care institution had made an effort with regard to fire safety? Which role did the psychiatric hospital, legislation, regulations, municipality, regulatory authorities and sector organisations play in relation to fire safety and which improvements are possible?"

Conclusions fire Rivierduinen

Serious outcome fire

The fire that broke out on 12 March 2011 in the Rivierduinen psychiatric hospital in the municipality of Oegstgeest had a serious outcome. The reason for this was that the fire safety measures that the institution had implemented did not lead to a safety level that protected patients against the consequences of a fire that develops quickly.

2 In accordance with the 'ALARP' approach: As low as reasonably practicable. In care institutions, the safety of third parties, in the case of Rivierduinen, patients who are less able to manage on their own, is in the hands of the care institutions themselves. The institution must, therefore, do everything in their power to organise the safety of its patients. As safe as reasonably practicable.

The investigation showed that there were various direct causes for the serious outcome of the fire at Rivierduinen.

- The patients of the Elderly Intensive Care 4 department were less able to manage on their own and dependent on others for their evacuation should a fire break out. This had an impact on the evacuation.
- The mattress in the room where the fire broke out was not of the fire-retardant type. Several fire reconstructions commissioned by the Dutch Safety Board have shown that only the mattress could have been responsible for the fast fire development in this room.
- The company emergency response team members did not manage to perform in accordance with the emergency plan, i.e. to extinguish the fire, to close the door of the fire room and to evacuate the wing. The head member of the company emergency response team did not manage to indicate to the fire brigade where people were still located in the building.
- The bedroom doors were not self-closing. This meant that the company emergency response team did not have a 'safety net' for not closing the doors. The door closing could have limited the spread of smoke and would have had a positive impact on fire development and survival conditions in the building.

Rivierduinen fire safety

Rivierduinen complied with the requirements set by legislation and regulations in the area of fire safety. The psychiatric hospital, however, approached fire safety in a non-integral manner; they did not tailor the fire safety measures to the patients' ability to manage on their own and did not consider these measures in relationship to each other.

- Rivierduinen had paid attention to the different aspects of fire safety (structural, technical and organisational measures and inventory). On 12 March 2011, the psychiatric hospital was, however, incapable of controlling the risk of the fire spreading and to evacuate all patients present on time.
- Before the fire the board, works council and employees of Rivierduinen assumed that the necessary safety measures had been implemented.
- The client and family board assumed that there was a fire safe situation.
- The range of measures that Rivierduinen had implemented with regard to fire safety, however, included a number of weaknesses.
- Rivierduinen was aware of the group of psychiatric patients' limited ability to manage on their own in the department where the fire broke out. The psychiatric hospital underestimated the effect this would have on an evacuation should there be a fire.
- Rivierduinen aimed to use fire-retardant mattresses but did not have a conclusive policy in place with regard to this.
- Rivierduinen had a company emergency response team with corresponding planning and care providers who were trained for company emergency response tasks. The company emergency response team members, however, had only practised to a limited degree. Moreover, problems that arose from drills, such as not closing the doors and windows, had not been resolved. In addition, the psychiatric hospital's expectations about the ability of care providers to control a fire were too high.
- Rivierduinen did not have a safety net of technical measures in place such as a sprinkler system or self-closing doors. These measures reduce dependency on 'soft' measures (company emergency response team).
- The consequences of a lack of cohesion between the implemented measures and the degree to which patients are able to manage on their own during an evacuation became clear during the fire on 12 March. The company emergency response team was unable to control the initial fire. Subsequently, smoke and heat spread rapidly because of the presence of sufficient flammable material, human actions and the lack of a 'safety net' of technical measures. As a result of this the company emergency response team did not have sufficient time to successfully complete the evacuation of the group of less able patients.

Legislation

Building law and regulations use the terms “bedridden” and “not bedridden” to determine designated use. These terms, however, only take account of the different forms and gradations of being able to manage on your own to a limited degree and, moreover, are open to interpretation. This may contribute to care institutions implementing measures that, in practice, do not lead to the necessary fire safety level.

- The law makes a distinction between patients/residents who are or are not “bedridden”. This means that patients will have to be evacuated with or without their beds.
- This distinction does not do justice to the actual situation in care institutions. Often, the patients concerned are not really bedridden, but are nevertheless less able to manage on their own during an evacuation.

Granting building (occupancy) permits

The municipal process for granting building (occupancy) permits at Rivierduinen, Oegstgeest site, complied with the requirements set by legislation and regulations but did not lead to the necessary fire safety level, i.e. a level that could have protected patients less able to manage on their own against the consequences of a developing fire. The reason for this is that a dialogue was missing between the municipality of Oegstgeest and the psychiatric hospital about the degree to which patients were able to manage on their own and how this related to the measures to be implemented. The fact that the municipality does not consider all aspects of fire safety in a cohesive manner based on legal requirements during the permit application process plays a part in this as well.

- The designated use of the building is the guiding factor for the measures to be implemented when granting building (occupancy) permits. Care institutions determine the designated use. The institution is expected to know its buildings, processes and patients best.
- Rivierduinen determined the designated use when applying for a permit from the municipality of Oegstgeest (not bedridden) and thus assumed a literal explanation of the terms “bedridden” and “not bedridden”.
- The municipality of Oegstgeest followed the lead of the psychiatric hospital with regard to this issue.
- A dialogue was not organised between Rivierduinen and the municipality of Oegstgeest about the degree to which patients were able to manage on their own and how this related to the measures to be implemented, nor were realistic scenarios discussed. Such a dialogue could have led to improved fire safety measures, tailored to the actual situation at Rivierduinen and could have promoted an integral approach to fire safety.
- Municipalities are unable to intervene when fire safety falls short because of a lack of cohesion between the company emergency response team, the building characteristics and the (less able) patient population. Legal options are not available for this.

Supervision by state inspectorates

The supervision by the Inspectorate SZW (1st line), Dutch Healthcare Inspectorate (1st line) and Netherlands Shipping Inspectorate (2nd line) was (and is) not geared towards promoting an integral approach to fire safety at care institutions.

- The supervision of the state inspectorates focuses on their own field of activity; they do not arrive at a cohesive opinion about the fire safety of an individual care institution.

Sector organisations

Sector organisations in the care sector provide limited support to the promotion and implementation of fire safety in the sector.

- The sector organisations currently support care institutions to a limited degree where it concerns the development of knowledge and instruments for fire safety. Central government can stimulate the sector with regard to this issue. More about this can be found in the next paragraph.

Lessons for Rivierduinen and the sector

Care institutions
The Dutch Safety Board has noticed that care institutions focus on complying with legislation and regulations with regard to their fire safety policy. The reactions to the draft report from the different parties involved confirm this finding. Moreover, the Dutch Safety Board is surprised to have discovered that there have also been doubts about the usefulness of sector standards.

The focus on legislation and regulations seems to point to the fact that institutions are not sufficiently aware of the risks. When a fire breaks out and this leads to personal and/or material losses, the institutions are primarily responsible. This investigation has shown that on top of complying with legislation and regulations additional efforts are required to ensure fire safety.

In their fire safety policy, care institutions have been focusing on complying with legislation and regulations up to now. This does not lead to institutions that tailor fire safety measures to the ability of their patients to manage on their own, nor does it lead to institutions that consider these safety measures in relationship to each other. This integral approach must be the standard for fire safety in care institutions.

- Care institutions are themselves primarily responsible for fire safety.
- A correct risk assessment should be made and should result in realistic scenarios in which the degree to which patients are able to manage on their own when there is an evacuation is taken into account. This is essential to an integral approach to fire safety. Fire safety requires a tailor-made solution for each patient, department and building.
- There are proven options to increase checks and balances within the institution in order to realise increased cohesion between the various measures and between the measures and the patient population. Supervisory boards and works councils may also play a role regarding this issue. They can use instruments to ensure the board of the care institution remains focused by, for example, exerting influence on the objectives of audits and other forms of internal verification. Client boards can demand to be informed about this.
- When implementing measures, care institutions must take the fallibility of ‘soft’ organisational measures (company emergency response teams) into account and, therefore, choose ‘hard’ technical measures where possible (such as installing self-closing doors and sprinkler systems). This always applies but is easiest to realise for newly built property.
- Since the fire Rivierduinen has developed measures based on the investigation to improve and achieve the required safety level. The psychiatric hospital disseminates the lessons learned and measures implemented to other care institutions.

Rivierduinen
After the fire, Rivierduinen developed a range of measures to improve fire safety. One of these measures is performing a risk assessment throughout the whole organisation. In so doing, the psychiatric hospital does not limit itself to legislation and regulations but also inventories the residual risks linked to the specific population at the hospital. In addition, Rivierduinen has developed a system where patients are classified according to their ability to manage on their own in case of an evacuation or fire. This classification is used by the psychiatric hospital when offering rooms to its patients. The sector organisation for mental healthcare, GGZ Nederland, has earmarked this aforementioned classification system as a best practice that it will disseminate amongst its members.

Furthermore Rivierduinen started mapping the risks in its buildings and departments after the fire. Employees from all of the different departments and disciplines (care, facilities, property, company emergency response team, et al.) are involved in this. An attempt is thus made to assess risks jointly during group meetings based on (possible) incidents. Rivierduinen wishes to increase risk awareness amongst employees in this way and uses the results as input for possible policy. Rivierduinen is currently involved in pilots and is expected to need another year to complete this inventory of all risks in all of its buildings.

Other involved parties
During the building (occupancy) permit application process, municipalities and care institutions can provide an impulse to an integral approach to fire safety. This can be achieved by starting a dialogue with each other about the risks connected to the patient population while the permit application procedure is underway. Moreover, municipalities may stipulate an evacuation plan in the permit and can, subsequently, verify this. This option is relevant because municipalities can thus create a link between building characteristics and evacuation possibilities.

Municipalities, as the regulatory authorities, but also government supervisors can stimulate an integral approach to fire safety by care institutions by realising more cohesion in terms of their supervision. This cohesion is missing in current supervision.

The VROM Inspectorate, the Dutch Health and Safety Inspectorate, the Dutch Inspectorate for Youth Care and the Dutch Healthcare Inspectorate published the report "Fire safety of care institutions" in December 2011. Therein the state inspectorates also arrived at the conclusion that the supervision of care institution fire safety is fragmented. They recommend to the ministers and state secretaries of the Interior and Kingdom Relations, Health, Welfare and Sport and Social Affairs and Employment that the supervision of the fire safety concept for care institutions should, as much as possible, be covered by one regulatory authority only and that a conclusive supervision system must be put in place. The ministers of the Interior and Kingdom Relations, Health, Welfare and Sport and Social Affairs and Employment have indicated "that the extent to which this supervision can be performed more integrally will be examined in the framework of the development of regulations related to basic emergency response services".[3] These basic emergency response services are not only intended to assist the company emergency response services within an employment setting but also to assist clients, patients and visitors. Attention is also paid to the synchronisation hereof with the supervisory task. Currently, consultation about this takes place with the involved umbrella organisations of care institutions and the regulatory authorities. The ministers expect to inform the Dutch House of Representatives during the course of 2012 about the results thereof.

3 The ministers of Health, Welfare and Sport and of the Interior and Kingdom Relations and the state secretaries of Health, Welfare and Sport and of Social Affairs and Employment (2012).

Sector organisations and central government

Sector organisations can help institutions improve their fire safety by using an integral approach.

Central government can support sector organisations herein.

- Sector organisations must play an active role in bringing into operation the standard for an integral approach to fire safety. They must support institutions in drawing up inventories of the risks present. These tasks follow on from the primary responsibility that is borne by the care institutions that are affiliated to them.
- The sector does not use a shared, operational and useful definition for being able to manage on your own. This concept is essential for tailoring fire safety measures to the patient population of care institutions but is missing from sector standards and regulations.
- Sector organisations can promote the idea of the central concept of being able to manage on your own being elaborated and better translated and anchored into the fire safety policy of care institutions.
- Central government can stimulate sector organisations to apply the concept of being able to manage on your own during a fire in practice.
- Central government can encourage sector organisations to develop their own standards that fit in with the heterogeneous practice and diversity in the sector.
- The new Dutch Building Decree, the so-called Dutch Regional Operational Services (Regionale Uitvoeringsdiensten; RUD) and the Dutch Environmental Permitting (General Provisions) Act (Wet algemene bepalingen omgevingsrecht; Wabo) can be used to create more cohesion in the supervision of fire safety by regulatory authorities.
- Currently, the Dutch ministers of the Interior and Kingdom Relations, Health, Welfare and Sport and Social Affairs and Employment are examining the extent to which this supervision can be implemented in a more integral manner within the framework of developing regulations related to basic emergency response services.

To conlude

Research performed in the care sector during the past ten years has shown different problems to be present in the area of fire safety. Little improvement has been visible in relation to a number of these issues over the course of the years. In their last report, the state inspectorates show that fire safety is a problem in the majority of care institutions from a legal perspective and that fire safety in care institutions is still a structural safety issue. This is despite the efforts made since the fires in Volendam (New Year's Eve from 2000 to 2001) and in the Schiphol-East detention centre (2005). The Dutch Safety Board believes this situation to be a matter of concern and is of the opinion that this must be a reason for the involved parties to place fire safety in care institutions high on the list of priorities.

This investigation focuses on an institution that did, however, pay attention to fire safety and did comply with the corresponding requirements set by legislation and regulations. That it was possible for a fire to have such serious consequences at such an institution makes the conditions at the other care institutions even more worrisome.

The Dutch Safety Board finds it disturbing that, in the conversations it has held with institutions and board members, reference is often made to weighing up investments in safety, on the one hand, and investments in quality of care and life, on the other, without providing further substantiation. This is a train of thought that impedes finding a suitable solution; the interests mentioned are not, after all, mutually exclusive by definition.
Appropriate care is also safe care in the eyes of the Dutch Safety Board. The care sector is currently being confronted with considerable cutbacks and with a new funding system for accommodation that makes it possible for budgets to be deployed in a more flexible manner. When assessing care issues, safety will have to play an important role.

RECOMMENDATIONS

To Rivierduinen:

1. Ensure that the underlying factors that led to the serious outcome of the fire are removed. This means tailoring fire safety measures to the patients' ability to manage on their own and relating these measures to each other. Disseminate the lessons learned to other care institutions.

Explanation
The Dutch Safety Board is aware of the measures that Rivierduinen has developed since the fire to improve fire safety and has observed that Rivierduinen has already partially implemented the recommendation. The objective of this recommendation is to ensure that this process, that has already been started, is completed and assessed so that Rivierduinen can realise a fire safety level that protects patients who are less able to manage on their own against the consequences of a fire. It is important, within this context, that the checks and balances at the institution are increased, for example, by involving the supervisory board, general board, works council and client board more actively in the policy.

To the sector organisations of care institutions in The Netherlands (BoZ, Actiz, GGZ Nederland, NVZ, NFU, VGN, LPGGz and platform VG):

2a. Stimulate care institutions in setting up a fire safety policy in which fire safety measures are examined periodically in relation to each other and are tailored to the degree to which patients are able to manage on their own. This should be based on a systematic risk assessment in the different areas (structural, organisational, technical and inventory-based). Ensure that there is an exchange of knowledge, that standards are developed and that institutions are assisted in creating realistic scenarios.

2b. Ensure that the key concept of being able to manage on your own is elaborated and make sure that this concept is translated and anchored into the fire safety policy of care institutions in a uniform manner.

Explanation
These recommendations aim to stimulate care institutions to use an integral approach to fire safety and, in addition, develop and disseminate knowledge in the sector. Moreover, these recommendations must prevent each institution 'reinventing the wheel' on its own. Standards will enable care institutions to assess themselves on what they deem is fire safe for their patients. The degree of being able to manage on your own can also be included in the development of these standards. In addition, institutions can learn from each other, which can improve the general level of fire safety.

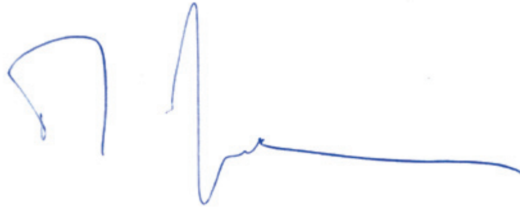
To the ministers of the Interior and Kingdom Relations, Social Affairs and Employment, Infrastructure and the Environment and Health, Welfare and Sport and to the VNG (association of Netherlands municipalities):

3a. Ensure there is cohesion in policy and supervision of fire safety.

3b. Stimulate the sector to translate the risks that are linked to the degree to which patients/ residents are able to manage on their own into measures to be implemented in fire safety policy. Assess this approach in 2015.

Explanation

These recommendations aim to ensure that there is cohesion in policy and supervision with special attention for the way in which care institutions, permit providers and regulatory authorities embed the degree to which patients are able to manage on their own in their policy.



T.H.J. Joustra
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FINAL CONCLUSIONS

The key questions of the investigation are as follows:

"How was it possible that the fire at Rivierduinen had such a serious outcome despite the fact that the care institution had made an effort with regard to fire safety? Which role did the psychiatric hospital, legislation, regulations, municipality, regulatory authorities and sector organisations play in relation to fire safety and which improvements are possible?"

Serious outcome fire
The fire that broke out on 12 March 2011 in the Rivierduinen psychiatric hospital in the municipality of Oegstgeest had a serious outcome. The reason for this was that the fire safety measures that the institution had implemented did not lead to a safety level that protected patients against the consequences of a fire that develops quickly.

Rivierduinen fire safety
Rivierduinen complied with the requirements set by legislation and regulations in the area of fire safety. The psychiatric hospital, however, approached fire safety in a non-integral manner; they did not tailor the fire safety measures to the patients' ability to manage on their own and did not consider these measures in relationship to each other.

Fire safety at care institutions
In their fire safety policy, care institutions have been focusing on complying with legislation and regulations up to now. This does not lead to institutions that tailor fire safety measures to the ability of their patients to manage on their own, nor does it lead to institutions that consider these safety measures in relationship to each other. This integral approach must be the standard for fire safety in care institutions.

Legislation
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Granting building (occupancy) permits
The municipal process for granting building (occupancy) permits at Rivierduinen, Oegstgeest site, complied with the requirements set by legislation and regulations but did not lead to the necessary fire safety level, i.e. a level that could have protected patients less able to manage on their own against the consequences of a developing fire. The reason for this is that a dialogue was missing between the municipality of Oegstgeest and the psychiatric hospital about the degree to which patients were able to manage on their own and how this related to the measures to be implemented. The fact that the municipality does not consider all aspects of fire safety in a cohesive manner based on legal requirements during the permit application process plays a part in this as well.

Supervision by state inspectorates
The supervision by the Inspectorate SZW (1st line), Dutch Healthcare Inspectorate (1st line) and Netherlands Shipping Inspectorate (2nd line) was (and is) not geared towards promoting an integral approach to fire safety at care institutions.

Sector organisations and state institutions
Sector organisations in the care sector provide limited support to the promotion and implementation of fire safety in the sector.
Sector organisations can help institutions improve their fire safety by using an integral approach.

Central government can support sector organisations herein.

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