

## 4 CONCLUSIONS

The conclusions include the causes of the incident. A cause means the various factors in the background of the incident and the direct and indirect circumstances affecting it.

1. In the spring of 2018, there was such congestion in traffic coming from Russia that a need emerged for the temporary storage of wagons outside RID (transport of dangerous goods) railway yards. No attempt was made to limit the amount of traffic because, according to the Finnish Transport Agency and VR, they had no means to do so and the Ministry of Transport and Communications and Finnish Transport Safety Agency (Trafi) were unaware of the congestion problem.

*Conclusion: Existing information on the number of transports entering Finland was not used for the management of railway network capacity and, where necessary, the restriction of RID traffic coming from Russia.*

2. At the request of VR, the Finnish Transport Agency identified locations for the temporary storage of RID wagons close to Kouvola. In this, the Agency used an analysis of storage locations for decommissioned rolling stock. This took no account of the requirements for the temporary storage of RID wagons, or of the longitudinal gradient of the track. There was no recognition of the risks associated with the temporary storage of RID wagons outside RID railway yards.

*Conclusion: Safety levels dramatically decrease during the temporary storage of RID wagons outside RID railway yards. The identification and management of risks posed by normal rail traffic was deficient in the operators' safety management systems. The guidelines on notifying the rescue authority were unclear.*

3. The employees in charge of monitoring the wagons during the storage period lacked the training required for the task and were unaware of the danger posed by the substance in the wagons. Their tasks only included checking for leaks.

*Conclusion: The employer had not provided the training or induction required by legislation on the transport of dangerous goods, and this endangered the safety of the employees. In addition, there was no monitoring to ensure that the wagons remained in place.*

4. The wagons began moving as their rolling resistance decreased due to warmer weather, and a reduction in the holding power of the stop blocks due to moisture on the rails. The number of stop blocks was insufficient under the circumstances, and the parking brakes were not engaged.

*Conclusion: Guidelines on the number of stop blocks failed to take account of the weight of the wagons or the longitudinal gradient of the track. The guidelines overestimate the holding power of the stop blocks.*

5. The anti-climbers of the SA3 central coupler based on the GOST standard did not prevent the wagons from separating in the collision, and the wagons had no safety bumpers protecting the tanks.

*Conclusion: The structure of SA3 couplers and lack of side buffers on GOST-standard wagons can easily lead to damage during collisions. Anti-climbers should be able to prevent the couplers from uncoupling, even during collisions. Collision*

*damage would also be reduced if all of the wagons had sufficiently strong headshields.*

6. In the risk assessment, the emergency duty officer failed to create a sufficiently clear picture of the circumstances of the accident and had to raise the alarm on the basis of insufficient information.

*Conclusion: Compliance with risk assessment guidelines is highlighted in the case of rare accidents. The risk assessment guidelines for dangerous goods do not provide sufficiently clear instructions for ascertaining the UN number of a dangerous substance.*

7. The rescue operation was led remotely. The support operations offered by ISTIKE were not used. The interpretation of the situation by the officer in charge did not match the situation at the scene of the accident, and the situational awareness did not develop sufficiently. Emergency medical services only joined the operation on the day after the accident.

*Conclusion: The communication of a realistic situational awareness is very important in remote management situations. No qualitative requirements have been drawn up on the content and development of a situational awareness of an accident.*

8. No operational area command (OAC) was set up at the scene of the accident. The rescue authorities and other participants did not organise their activities. The rescue authorities were not familiar with the rescue organisations (and their roles) of the Finnish Transport Agency and VR. Cooperation was inadequate and no use was made of rescue equipment and resources suitable for the situation. The issue of post-accident preventative measures was left open after the rescue operation had ceased. This was partly due to lack of clarity about what would be involved in placing the scene of the accident under the responsibility of the Finnish Transport Agency.

*Conclusion: In extensive accidents requiring cooperation between several operators, an operational area command (OAC) would create a basis for effective cooperation. Not all stakeholders are aware of the changed roles and responsibilities of operators in the railway sector. Neither practical procedures nor the parties responsible for environmental damage in the event of rail accidents have been defined with sufficient clarity.*

9. The risk assessment made in the command centre resulted in insufficient consideration of occupational safety and the danger of further accidents.

*Conclusion: No standard, continuous risk-assessment method has been set for the leadership of rescue operations. If guidelines related to certain types of accident are not complied with, there is a chance that no account will be taken of certain risks associated with the scene of the accident.*

10. A misconception occurred during the rescue operation with regard to the spread of the substance on the terrain. The primary action taken to prevent the chemical from spreading was insufficient. MTBE is not categorised as a hazard to the environment in the OVA (hazardous substance) guidelines.

*Conclusion: Insufficient information and understanding of the potential for serious environmental damage combined with lack of clarity about responsibility for preventing environmental damage led to the initial spread of the damage almost*

*beyond control. The OVA (hazardous substance) guidelines may direct the focus of rescue operations away from the prevention of environmental damage.*

11. The Regional State Administrative Agency did not support action by various authorities under safety agency leadership. When different authorities lead safety-related situations, the Regional State Administrative Agency must both support the competent authorities and, if necessary, coordinate their activities.

*Conclusion: In multi-actor situations, the Regional State Administrative Agency plays a role in coordinating the activities of the authorities. Coordination is particularly important when responsibility is transferred from the rescue services to the authorities responsible for clean-up.*

12. Information on the accident was sent to the Eastern Finland Regional Administrative Agency and the ELY centre along informal channels. This was because the individuals were already acquainted with each other.

*Conclusion: The Regional Administrative Agency and ELY Centre lack emergency on-call arrangements which would ensure the availability of the authorities.*