HEALTH AND SAFETY MANAGEMENT SYSTEM IN THE NATIONAL INSTITUTE OF STATISTICS (ISTAT)[1]

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Abstract. Istat is one of the few public institutions that have initiated the implementation of the Occupational Health and Safety Management System (*OHSMS*) since 2018 in order to ensure the Prevention and Protection Measures application. In 2018, Istat achieved the British Standard OHSAS 18001 certification and later, in 2021, UNI ISO 45001:2018 was confirmed and updated. Organisational and management measures are the basis for defining the prevention and protection system. The evolution of health and safety organisation required designated figures and specific measures despite challenges such as changes in managers, transfers and organisational complexity. The goals and the policies focus on worker protection, ethical principles, the *OHSMS* adoption and the Fire Safety Management System development. These processes assign internal responsibilities, encouraging employee participation in the continuous improvement through the Workers' Representatives for Safety and the Employer. *OHSMS* has led to the improvement in working conditions and to a safety culture growth. Many procedures have been implemented such as hazard identification, legal requirements, goals and improvement programmes, training management, information and communication, non-conformity management, health surveillance, emergency preparedness and response, internal audits and management review. Operational instructions are provided for activities such as video terminals usage, manual loads handling, electrical risk, personal protective equipment management, interference risk management, building and plant maintenance and instrumental resource management. All the procedures are applicable to all the Institute Roman offices. Later, *OHSMS* has been extended to regional offices. This work describes the adoption of the *OHSMS* model as per Legislative Decree 81/08, in the complex reality of a public research institution as Istat. This adoption is a best practice to promote the continuous improvement in workers' health and safety protection.

[1] This article is the result of the common contribution of all and, therefore, the individual contribution is considered equal and equivalent to that of the other co-authors. The authors' points of view expressed in the article do not necessarily reflect the official opinions of the National Institute of Statistics - Istat.

1. Introduction

The European Framework 2021-2027 on occupational safety[2] establishes priorities and key actions necessary to improve workers' health and safety in the coming years within the context of a post-pandemic world, characterized by green and digital transitions, economic and demographic challenges and the evolution of the traditional work concept (Amatucci *et al.*, 2024). The plan reiterates the need for safe working conditions, essential for a healthy and productive workforce, and emphasizes how crucial is this aspect for the sustainability and competitiveness of the EU economy (Barra, 2022).

The National Institute of Statistics (Istat), as a public research institution, plays a fundamental role in producing high-quality official statistics, operating autonomously but in constant interaction with the academic and scientific world. One of its main missions is to serve the community through the production, communication, analysis and forecasts of statistics based on advanced European scientific standards.

In accordance with art. 30 of Legislative Decree 81/08, Istat has adopted, since 2018, the model of the Occupational Health and Safety Management System (*OHSMS*) in order to ensure the application of prevention and protection measures in the complex and articulated Public Administration reality. Over the years, Istat has consolidated its commitment to workplace safety achieving important certifications such as the British Standard OHSAS 18001 and the UNI ISO 45001:2018.

The effectiveness of the System is confirmed by the results of a monitoring conducted by Accredia and INAIL in 2018 on a large number of companies, which showed a reduction of 16% in the Frequency Rate[3] of certified companies compared to others, and a decrease of 40% in Severity Rate[4] (Nisi *et al.*, 2018).

The work aims to highlight the effectiveness of the management system in improving health and safety conditions in workplaces, reducing the occurrence of injuries and the associated social and economic costs.

[2] https://ec.europa.eu/social/BlobServlet?docId=24122&langId=en

[3] The Frequency Rate quantifies the number of accidents per million hours worked during a specific period (Frequency Rate = number of accidents x 1,000,000 / number of hours worked).

[4] The Severity Rate quantifies the number of absences from work due to accidents occurred during a specific period (Severity Rate = number of total days absence accidents x 1,000 / number of hours worked).

2. Materials and methods

The adopted *OHSMS* is compliant with the UNI ISO 45001:2018 standard, it aims to improve health and safety at work by establishing an effective control, and to develop a culture of safety. As described by UNI INAIL 2001, the *OHSMS* follows a cyclical sequence of planning, implementation, monitoring and review of the system, through a dynamic process. The ability of the system to achieve planned objectives depends on the commitment and involvement of all company figures, especially at the highest level. Table 1 shows the organisational structure and roles in the *OHSMS* in Istat.

Table 1 – *Organisational Structure and Roles in the Occupational Health and Safety Management System (OHSMS) in Istat.*

• Employer, Manager and Supervisor • Prevention and Protection Service • Occupational Health and Safety Management System Manager • Fire Safety Technical Manager • Asbestos Maintenance and Control Plan Manager • Occupational Physician	• First Aid and Emergency Responders; • DUVRI Update Coordinator; • Workers' Safety Representatives (WSR); • IT Department for work equipment supply (PCs, Monitors, Printers, etc.) • Administrative Department for the management and compliance of buildings and equipment • Human Resources Office (organisation of medical examination and medical records archiving)

Source: Istat, Organizational Structure and Roles in the OHSMS.

The adoption of *OHSMS* in Istat was based on the development of a series of managerial procedures, technical guidelines and operational instructions aimed at verifying and monitoring the implementation of Prevention and Protection Measures in a complex reality. These measures have strengthened the safety management system, improving the protection of workers and promoting a culture of safety within the Institute. Furthermore, in accordance with the Ministerial Decree of 2 September 2021 «GSA», the OHSMS has integrated the Fire Safety Management System both in operation and in emergency phase (*FSMS*).

The main organisational, managerial and technical measures of the *OHSMS* form the basis for defining the prevention and protection system. They have been adopted by the Director General who verifies and monitors their implementation through the Occupational Safety Management System Manager and all the involved structures. The procedures include: hazard identification and risk assessment to prevent

potential accidents; regulatory compliance and fulfilment of additional requirements ensuring a safe working environment; application of improvement objectives and programmes to promote an increasingly safe and healthy work environment; accurate management of documentation and ongoing training to ensure compliance and staff awareness of safety regulations; effective communication and non-conformity monitoring to identify and solve promptly potential risk areas in the workplace; prompt and precise management of accidents and injuries to prevent their occurrence; occupational health surveillance as an integral part of employees' health management, ensuring regular checks and prevention of occupational diseases; preparedness and response to planned emergencies to ensure the safety and protection of personnel in critical situations; management of personal protective equipment to ensure they are suitable and correctly used by workers; management of interference risks to avoid accidents due to interaction between different activities or processes in the workplace; accurate ordinary and extraordinary maintenance of buildings and facilities to ensure a safe and functional working environment; management of instrumental resources to guarantee the availability and proper maintenance of tools necessary to carry out work activities safely; regular internal audits and management review to assess the effectiveness of the health and safety management system and identify areas for improvement. Table 2 lists the procedures related to the organisational, managerial and technical measures of the *OHSMS*, fundamental to maintain a safe working environment.

Table 2 – *Main procedures related to organisational, managerial, and technical measures of the OHSMS.*

❑ Hazards identification and risk assessment	❑ Management of injuries and accidents
❑ Legal and additional requirements	❑ Health surveillance management
❑ Objectives and improvement programmes regarding Health and Safety in the workplace	❑ Emergency preparedness and response
❑ Document management	❑ Management of personal protective equipment
❑ Training management	❑ Management of interference risks
❑ Information	❑ Management of ordinary and extraordinary maintenance of building and plant
❑ Communication	❑ Management of instrumental resources
❑ Management and monitoring of non-conformities	❑ Internal audits and management review

Source: Istat, Organizational, management, and technical measures adopted in the OHSMS.

2.1. Operational instructions

In order to ensure workplace safety, specific "operational instructions" support specific activities. These instructions have been developed to cover a wide range of tasks, as the use of video terminals, photocopiers, printers, scanners and fax machines, manual handling of loads, use of stairs and stepladders, management of electrical risk, minor maintenance activities, use of sharp and cutting objects, use of automated archives, management of first aid kits and injuries in case of fire, lifts emergency interventions, hygienic requirements of air treatment systems and general hygiene and health prevention and protection measures for the Istat offices in Rome. These operational instructions are essential to ensure that activities are carried out safely and in compliance with regulations, strongly reducing risks to workers' health and safety.

3. Organisational Measures for Emergency Management

Among the main organisational and managerial measures, we find the emergency preparedness and response which includes a detailed procedure to face situations of serious and immediate danger. The procedure concerns the appointment of emergency responders, the adequacy of teams that should be assembled according to the number of people involved and the work shifts, and the identification of an emergency coordinator. The names of the emergency responders are available to all personnel through signs situated in the workplace. Moreover, in case of immediate danger, employees are given instruction to cease their activity, leave the office and head towards a safe place.

Table 3 – *Data of evacuation drills conducted in the last 6 years.*

	2019		2020*		2021*		2022		2023		2024	
Site	Duration	Emptied	Duration	Emptied	Duration	Emptied	Duration	Emptied	Duration	Emptied	Duration	Emptied
A	7'	140	4'	104	< 15'	21	3'	53	5'	77	4'	71
B	8'	315	4'	338	-	-	5'	93	6'	145	5'	84
C	6'	374	-	-	-	-	5'	218	6'	308	5'	291
D	6'	209	-	-	-	-	5'	75	6'	116	4'	90
E	5'	116	-	-	-	-	5'	38	4'	42	5'	48
F	7'	139	-	-	-	-	8'	60	7'	49	8'	45

*Source: Istat, Internal documents. * In 2020 and 2021, due to the COVID-19 emergency, it was not possible to conduct on-site evacuation drills in some offices. However, in each year, six virtual drills were carried out via web conference with the emergency team members of different offices. "Duration" is indicated in minutes, while the "Emptied" columns show the number of people evacuated from different sites.*

It is fundamental to develop an Emergency and Evacuation Plan with detailed floor plans that show the position of firefighting devices, alarm buttons, emergency switches, evacuation routes and emergency exits. Furthermore, fire drills are scheduled and conducted, at least annually, to test the effectiveness of procedures and to train the staff.

As a final point, the emergency equipment is regularly replenished to ensure the immediate availability in emergency situations. Table 3 reports data of the evacuation drills conducted in the last 6 years, while Table 4 reports the number of fire prevention, firefighting, and emergency management operators over the past 6 years.

Table 4 – *Number of Fire Prevention, Firefighting and Emergency Management Officers in the last 6 years.*

Site	2019	2020	2021	2022	2023	2024
A	85	85	83	77	72	68
B	33	38	38	40	38	31
C	16	16	16	16	16	16
D	17	17	15	15	15	17
E	43	42	39	35	35	33
F	29	28	25	19	17	16
Total	223	226	216	202	193	181

Source: Istat, Internal documents.

4. Active Employee Involvement in the *OHSMS*

The active involvement of employees in the Occupational Health and Safety Management System (*OHSMS*) is crucial to ensure a safe and healthy work environment (ILO-OSH, 2001). The planning of intervention which includes adjustment measures and continuous improvement programmes constitute the operational methods for hazard identification and risk assessment and control. The direct involvement of employees in these activities is part of the Institute goals and policy inasmuch as their experience of daily working conditions can implement and improve the OHSMS.

The Workers' Safety Representatives (*WSRs*) and the Employer play a central role in encouraging employees' participation through regular meetings, safety training sessions with the purpose of solving issues and fostering open dialogue on workplace safety. This collaboration has led to an increase in safety awareness, a greater adherence to procedures and a safer and healthier work environment. As a

result, non-commuting accidents have significantly decreased because they are strictly connected to the effectiveness of prevention and protection measures.

Data collected from surveys on Work-Related Stress highlight the effectiveness of employees' active participation. In the period 2019-2021, around 40% of the workers of the Roman offices (approximately 1825 employees) were involved in the work-related stress risk assessment, identifying 54 organizational units. In the period 2022-2024, of about 1470 workers, 45% were involved in the assessment, identifying 57 organizational units (Camisasca *et al.*, 2023 No.4). These data demonstrate the importance of employees' participation in improving working conditions and risk management.

5. Results

A detailed analysis of the results obtained through the implementation of the Occupational Health and Safety Management System (*OHSMS*) shows the significant effects that the OHSMS has on the workplace. It can be observed that a significant number of visits and inspections have been conducted over the years, both for health surveillance visits and for prevention and risk control activities. As regards in particular health surveillance visits, data show a significant reduction in the total number of visits in the years 2020 and 2021, primarily due to the pandemic emergency.

However, despite these challenges, it was possible to maintain an adequate level of health surveillance visits (Camisasca *et al.*, 2023 No.1) to ensure employees' health and safety, as reported in Table 5.

Table 5 – *Number of health surveillance visits conducted by the Occupational Physician in the last 6 years.*

Number of Visits	2019	2020*	2021*	2022	2023	2024
Total Employees	577	206	338	806	663	766
Video Terminal Users	505	190	336	780	654	726
Periodic	-	-	292	727	493	601
Preventive	-	-	35	23	133	58
On request	6	4	5	30	21	60
Art.41 paragr. 2, e-ter (60 days)	5	-	6	2	7	7
Eligibility for emergency teams	83	12	-	24	8	34

Source: Istat, the data provided by the occupational physician and recorded in internal documents.
** Reduced medical surveillance visits due to pandemic emergency. - Data not available.*

Moreover, the Occupational Physician together with the Prevention and Protection Service Manager and the Fire Safety Technical Manager carried out inspections in the Institute Roman offices that made it possible to identify potential risks and to adopt corrective and preventive measures promptly.

However, in spite of the reduction of inspections during the pandemic emergency, it was possible to maintain an adequate level of control and monitoring of safety conditions, as reported in Table 6.

Table 6 – *Number of inspections carried out by the Occupational Physician, the Prevention and Protection Service Manager and the Fire Safety Technical Manager in the last 6 years.*

	2019	2020	2021	2022	2023	2024
Occupational Physician	7	6	5	6	6	6
Prevention and Protection Service Manager	19 *	3 **	3 **	8	7	8
Fire Safety Technical Manager	19 *	1 **	1 **	7	9	6

*Source: Istat, Internal documents. * Inspections carried out in collaboration with external companies. ** Inspections reduced due to pandemic emergency.*

Table 7 reports the number of activities over the past 6 years involving the *WSRs*, in which workers have participated actively and extensively. Furthermore, the active participation of Worker Safety Representatives (*WSRs*) in various activities, such as meetings and initiatives related to risk management, significantly helped to increase safety awareness in the workplace and promote a participative and collaborative safety culture.

Table 7 – *Number of activities Workers' Safety Representatives (WRS) have been involved in during the last 6 years.*

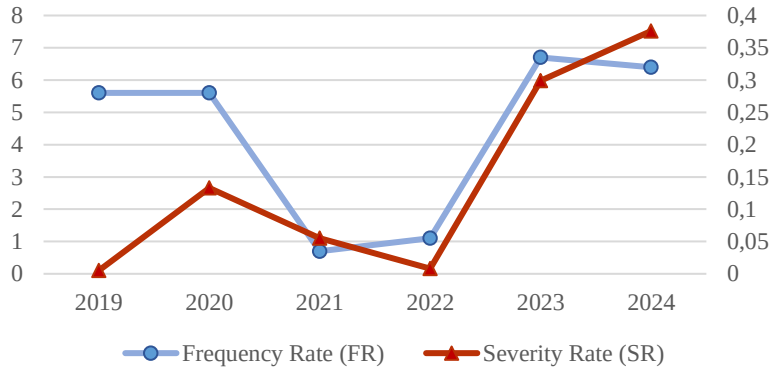
	2019	2020	2021	2022	2023	2024
Number of activities involving WRS *	59	6	7	61	4	5

Source: Istat, Internal documents.
** This number includes meetings and participation in activities (including the work-related stress risk assessment in the years 2019 and 2022 - Art.35, Art.50).*

All data demonstrate the effectiveness of the *OHSMS* in enhancing employees' safety and well-being, as well as ensuring regulatory compliance and reducing work-related risks. Accident Frequency Rate (FR) and Accident Severity Rate (SR) are INAIL indicators that offer a detailed overview of the workplace safety trend over

the years. The FR quantifies the number of work-related accidents per hours worked, while the SR assesses the gravity of accidents by taking into account the number of days lost per accident. Figure 1 graphically reports the FR and SR trend over the years.

Figure 1 – *Trend of FR and SR over the years.*



Source: Istat, Internal data processing.

Over the past 6 years, the FR values have been acceptable, with a significant decrease in 2021 in response to the pandemic emergency which reduced the value to 0,7. This outcome suggests an overall improvement in workplace safety conditions thanks to an efficacious risk management and consistent commitment to injury prevention. Similarly, the SR values over the past 6 years have been very low, indicating minimal impact of injuries on productivity. This data suggest that all the efforts to ensure a safe and healthy work environment have led to significant results, minimizing the number of days of work lost due to injuries. Table 8 shows the values of the temporal trend of these indices.

Table 8 – *Trend of FR and SR over the years (Values).*

	2019	2020	2021	2022	2023	2024
Frequency Rate *	5,6	5,6	0,7	1,1	6,7	6,4
Severity Rate *	0,005	0,133	0,055	0,008	0,299	0,376

Source: Istat, Internal documents.
** Data on workplace accidents are predominantly of the «On the Way to Work» type.*

Moreover, the percentage of commuting and non-commuting accidents compared to the workforce shows a significant change over the years, with a gradual decrease in non-commuting accidents as reported in Table 9.

Table 9 – *Percentage of accidents occurring during commuting and non-commuting compared to the workforce and impact on the workforce of non-commuting accidents.*

	2019	2020	2021	2022	2023	2024
% of commuting accidents	84%	94%	100%	100%	94%	94%
% of non-commuting accidents	16%	6%	0%	0%	6%	6%
Workforce	1779	1724	1661	1590	1627	1595
Incidence on workforce of non-commuting accidents	0.009	0.003	0	0	0.003	0.003

Source: Istat, Data obtained from processing internal documents.

These data highlight the effectiveness of the preventive measures adopted to reduce workplace injuries and generally improve employees' safety. In fact, non-commuting accidents have significantly decreased from 16% to 6% as they are connected to prevention and protection measures.

To conclude, data confirm that the implementation of the *OHSMS* has led to a considerable improvement in workplace safety conditions, ensuring a safer working environment and protecting the health and well-being of employees.

6. Continuous organisational improvements

This work highlights the continuous improvements in the organisation due to the adoption of the Occupational Health and Safety Management System (*OHSMS*) and its implementation in all the Roman offices of the Institute. Improvements aimed to strengthen prevention also through audits conducted by the Accredited Agency. It is worth noting that during assessments, non-conformities did not emerge but only areas for potential development. Furthermore, the Accredited Agency observed good practices, including a strong safety organisation and the presence of detailed, precise and updated documents, such as the Risk Assessment Document, the Interference Risk Assessment Document and the Emergency Plan for Safety. The completeness and accuracy of these documents also consist in the accurate definition of roles and responsibilities within the organisational structure.

The health and safety management model has been applied also to Regional offices of the Institute to ensure uniform safety standards and extend the benefits of the *OHSMS* to a greater number of employees. Istat has initiated this process with a holistic approach, including staff training and adaptation of procedures to specific regional needs, while ensuring clear assignment of responsibilities in line with decision-making autonomy.

7. Final considerations and conclusions

The adoption of an OHSMS has led to significant improvements in working conditions, to regulatory compliance and to a safety culture growth within Istat. It has significantly enhanced the safety and health of workers, of services users and, in general, the safety of all other stakeholders through the effective application of the system, including processes, by reducing or eliminating the risks to which workers are exposed.

The main organisational and management measures adopted have contributed to emergency preparedness and response, to the assessment of work-related stress risk and to the effective management of workplace injuries and accidents.

The active participation of employees, facilitated by Worker Safety Representatives and the Employer, has played a fundamental role in ensuring a safe and healthy working environment.

The observance of the UNI ISO 45001:2018 standard has led to continuous improvement of policies and processes through the adoption of new digital technologies and the extension of the OHSMS to regional offices.

In conclusion, the adoption of the OHSMS in Istat represents a best practice in the field of workplace safety, promoting continuous improvement in the prevention and protection of the health and safety of workers.

References

AMATUCCI S., BARRA M.I., BENEDETTI F., D'AMARIO S., MORINELLI G., A. TERRACINA A. 2024. From approaches to outcomes: evidence of the reduction of accident trends in certified companies. In INAIL e Accredia. *The effectiveness of accredited certifications for occupational health and safety management systems. Technical standards, regulations, support, and outcome detection: from current status to perspectives*. Milan, pp. 45-58.

BARRA M.I. Occupational health and safety management systems: incentives and economic returns for businesses. Safety notebooks AIFOS, No.4, December 2022.

CAMISASCA M., PIETRANTONIO E., MAGRO R., ARBOREA A., FABIANI A., GIORDANO C., PIETRANTONIO M., GUERRIERO G., SPARANO A., 2023. Psychosocial risks: work-related stress risk assessment in Istat as a goal for the workers' well-being. *The Italian Journal of Economic, Demographic and Statistical Studies. RIEDS.* Vol. LXXVII, No.4, pp. 181-191.

CAMISASCA M., PIETRANTONIO E., MAGRO R., ARBOREA A., FABIANI A., GIORDANO C., PIETRANTONIO M., SPARANO A., 2023. A pandemic health risk management model for the protection of workers: the Istat experience.

The Italian Journal of Economic, Demographic and Statistical Studies. *RIEDS*. Vol. LXXVII, No.1, pp. 53-64.

ILO-OSH 2001. *Guidelines on occupational safety and health management systems*, 2nd ed. Geneva, ILO - International Labour Office, 2009. Available at: https://www.ilo.org/safework/info/standards-and-instruments/WCMS_107727/lang--en/index.htm

ITALIAN LEGISLATIVE DECREE of 9 April 2008 n. 81. Text coordinated concerning the protection of health and safety in the workplace.

MINISTERIAL DECREE of 2 September 2021. Text coordinated on fire safety in the workplace. Criteria for the management of workplaces in operation and in emergency and characteristics of the specific fire prevention and protection service, pursuant to article 46, paragraph 3, letter a), point 4 and letter b) of the legislative decree of 9 April 2008, n. 81.

NISI A., AMATUCCI S., BARRA I., BENEDETTI F., MORINELLI G., TERRACINA A. 2018. Safety in the workplace and certification, *Osservatorio Accredia*, INAIL e Accredia, No.1.

UNI INAIL 2001. Guidelines for an occupational health and safety management system (OHSMS).

UNI ISO 45001:2018 Occupational health and safety management systems - Requirements with guidance for use.

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