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Araştırma Makalesi

SUPERVISION IN THE DEVELOPMENT OF TURKISH MINING LEGISLATION

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Abstract

Various supervision systems have been applied in the Mining Law and related regulations in legislative development in order to ensure the control of mining areas in terms of occupational health and safety (OHS). In a mining enterprise, mining operation activities cannot be carried out without assigning a supervisor. In Turkey, some changes have been made regarding the supervision system and its applications in the development of legislation. Considering the experience of such fundamental changes, it would be beneficial to evaluate the legislation not only by lawmakers but also from the eyes of supervisors who are responsible for the supervision and oversight of mining operations. In this study, from the Land Law dated 1858 until today, the change of practices on different subjects that provide and affect safety and control in mining operations, such as the system of supervision, the condition of appointing a supervisor, the number of supervisors per worker in the mining operation, the condition of having at least one supervisor in each mining operation, was analyzed. In addition, whether the supervisor is obliged to be permanent at work and the maximum number of mining licenses that can be taken under the responsibility of supervision are also included in the analysis. Then, the presence of frequent changes in mining legislation and other problems in this regard was determined through the eyes of the supervisors, and the supervision system that the supervisors wanted to be implemented was analyzed.

Keywords: *Engineer, Law, License, Occupational Health and Safety, Operation, Regulation.*

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TÜRK MADEN MEVZUATI GELİŞİMİNDE NEZARETÇİLİK

Öz

Maden sahalarının işçi sağlığı ve iş güvenliği (İSG) açısından denetiminin sağlanması için mevzuat gelişiminde Maden Kanunu ve ilgili yönetmeliklerde çeşitli nezaretçilik sistemleri uygulanmıştır. Bir maden işletmesinde nezaretçi atanmadan maden işletme faaliyetleri gerçekleştirilememektedir. Türkiye'de mevzuat gelişiminde nezaretçilik sistemi ve uygulamaları konusunda birtakım değişiklikler yapılmıştır. Bu denli köklü değişikliklerin yaşanması dikkate alındığında, yalnızca kanun yapıcıların değil, maden işletmelerinin denetiminden ve gözetiminden bizzat sorumlu ve sahada görev yapan nezaretçilerin gözünden de mevzuatın değerlendirilmesi faydalı olabilecektir. Bu çalışmada, 1858 tarihli Arazi Kanunu'ndan günümüze değin; "nezaretçilik sistemi", "nezaretçi atanma koşulu", "maden işletmesinde çalışan işçi sayısı başına nezaretçi koşulu", "her maden işletmesinde en az bir nezaretçi bulundurma koşulu" ve "nezaretçinin iş başında daimi olarak bulunma zorunluluğunun olup olmadığı, "nezaretçilik sorumluluğunda alınabilecek azami maden ruhsat sayısı" gibi maden işletmelerindeki güvenliği ve denetimi sağlayan ve etkileyen farklı konulardaki uygulamaların değişimi analiz edilmiştir. Ardından, nezaretçilerin gözünden bu konuda maden mevzuatında sık yapılan değişikliklerin ve diğer sorunların varlığı saptanmış, ve nezaretçilerin uygulanmasını istediği "nezaretçilik sistemi analiz edilmiştir.

Anahtar Kelimeler: *Hukuk, İş sağlığı ve güvenliği, Mühendis, Ruhsat, Yönetmelik.*

INTRODUCTION

The mining sector is at the forefront of the most severe and dangerous business lines that require special knowledge, experience, expertise, and constant supervision, due to the risks involved by nature. As a matter of fact, mining is in the very dangerous class category, as specified in the Workplace Hazard Classes Communiqué Annex of the OHS Law No. 6331. There is always the possibility of an accident resulting in death and injury if the necessary precautions are not taken. At the same time, various occupational diseases threaten the health of employees (Yıldız, 2017, p. 270; Ökten & Fişne, 2018, p. 160).

For this reason, the activities carried out in certain coordinates in the mining areas should be carried out taking into account the OHS and in accordance with the planned production plan. Accordingly, there are provisions in mining law and other relevant legislation on "supervision" (Yıldız, 2018; Maral, 2019, p. xvii).

Today, 63.3% of mining enterprises employ 1-9 employees. Enterprises employing 10-100 employees constitute 33.55% of the total mining enterprises; enterprises employing 100-249 employees constitute 2.21% of the total, and enterprises employing 250 and above employ 0.94% of the total. These data are the main issues for determining the OHS approach in the mining sector (Tuncay, 2019, p. 108). In addition, mine production amount, number of licenses, and number of

mining engineers[1] per worker are also the criteria to be taken into consideration in order to ensure control and OHS in these enterprises. In mining, in order to prevent work accidents, to reduce the risks and to be protected from the risks of these accidents, legislation that can adapt to the technical developments that can be applied is required (Yıldız, 2017, p. 270). As a matter of fact, audits and practices in terms of OHS are mostly carried out by the legislation prepared by the state and legislators (Kahraman, 2017, p. 118). The applicability of the issues expressed by the general legislation can be provided regionally in the mining enterprises through the Statutory Rules and Orders, Circulars and Directives (Yıldız & Haner, 2017, p. 64).

The intensive industrialization that started after the republic has brought about the need for skilled labor and experienced staff together with production. However, market conditions, cost, and political approaches that have occurred over time have caused OHS to drop down (Atılgan, 2019, p. 30). If the opinions of the sector are not taken in the preparation of the measures to be implemented today, and the production dimension of the business is not taken into consideration while preparing the new regulations, a set of unapplicable or unfair rules may arise, which is the subject that Turkey suffers most (Tuğ, 2014, p. 63).

Many mining safety laws (for example in the USA) have been created around the world after major accidents and casualties[2]. Mining operating security will always remain one of the priority issues that need precautions. Apart from technological developments, management techniques such as the transmission of safe, standard operating procedures and workplace culture are among the most critical issues for OHS in mines (Dessureault & Kahraman, 2010, p. 48). At this point, supervisors have a great responsibility.

The control of the operation of the enterprises in accordance with the technical compliance and legal regulations on OHS is called "supervision". In this regard, the authorized and responsible mining engineers, who supervise mining operations in terms of technical and OHS, are called "supervisors". This responsibility and authority have been determined through different regulations throughout history due to changing economic conditions, technology, and operations (Yıldız, 2018; Maral, 2019, p. 5).

The Land Law, which came into force in 1858, and the Mine Regulations, which came into force in 1861, were the most important mining legislative arrangements of its period on mining and mining control. Over the decades that have passed since these dates, there has been a technical staff problem in the operation of

[1] In Turkey, mines are under the rule and savings of the state. Production must be done in accordance with OHS, without loss of resources, environmentally friendly. The number of mining engineers in mining enterprises is determined by the effect of the mining sector having these differences from other sectors.

[2] Many of the mine and OHS legislation changes in Turkey were made almost immediately after mining accidents.

the country's mines and effective measures have been introduced and implemented to address this problem. According to the Mine Regulations, a mining engineer is obliged to be present in each province center by the mining administration.

With the Mining Law No. 6309, which came into force on March 11, 1954, within the legislative development, the concept of "Scientific Supervisor" was introduced. In this period, it was necessary to carry out technical activities in the operating licensed or privileged fields and to conduct the management works under the supervision of at least one mining engineer.

In the period of Mining Law No. 3213, which came into force on June 15, 1985, according to Article 31 of the Mining Law, the owner of the operating license was obliged to assign at least one mining engineer throughout the operation.

The concept of "Scientific Supervisor" was changed as "Technical supervisor" with Law No. 5177, which came into force on June 05, 2004. This regulation, which was included mining legislation and was implemented for about 60 years, was replaced by "technical supervision".

In the Mining Law, the duty of the engineer and the (technical) supervisor was redefined with Law No. 5177. Thus, the efficiency of engineering in mining has been increased (Yıldız, 2015a, p. 53). In the Mining Law Implementing Regulation (MLIR), which came into force on February 03, 2005, after Law No. 5177, it was regulated that the permanent supervisor is obligatory for open-pits employing at least 30 workers and underground operations employing at least 15 workers. With Law No. 5995, which came into force in 2010, the places where permanent supervisors will take office are shown in the Law. In addition, regardless of the number of workers employed by enterprises working with the underground production method, in case of employing 15 workers in open-pit mining, it was obligatory to have permanent supervisors (Yeşilyurt, 2011, p. 82).

The Law No. 6592, which brought important changes in the Mining Law No. 3213, came into force by being published in the Official Gazette (OG) dated February 18, 2015. The most important changes in this Law are to leave the authority to prepare technical documents such as reports and projects to be delivered to the General Directorate of Mining and Petroleum Affairs (MAPEG) only to Authorized Legal Persons (including a mining engineer), to remove the technical supervisor application, and to be obliged to employ permanent supervisory engineers in every production area.

In the theoretical context, although the legislative changes made are promising and contribute to the OHS in the mining sector, the main factor that will ensure sectoral improvement is the implementation features of these legislative changes. Considering all the changes in the regulations, the changes made in the field of general supervision and OHS generally show an understanding of introducing instant and reactive new legal arrangements to overcome the problems encountered

in practice. The legal regulations enacted by this approach are also not effective and sufficient for the safety, audit, and control of the mining industry as a whole (Güray & Abut, 2015, p. 170). In other words, rather than introducing new legal regulations, it is also important to ensure that the existing laws and rules are properly enforced and that the supervision is meticulously carried out.

According to Kayadelen, mining legislation in general is complex and very detailed and contains statements that are difficult to understand. If it is deemed necessary to strictly apply every provision, mining investors will not be able to work. On the other hand, there are gaps in the legislation regarding some situations (Kayadelen, 2015). The above-mentioned legislative changes on supervision have developed in the historical process. From the Ottoman Empire period to the present Republic period, the efficient utilization of mines and bringing them to the national economy has been realized through various regulations. Especially since the Land Law in 1858, mining legislation has undergone fundamental changes many times. The Mining Laws in the Republic period in Turkey and the changes made in the legislation development in these Laws are shown below (Table 1) (Maral, 2019, p. 5).

Table 1: Republican mining laws and changes[3]

	Law/Decision No	Mining Law and Changes	Date	OG number
1	6309	Mining Law	11/03/1954	8655
2	6662	Change	24/02/1956	9242
3	6688	Change	03/03/1956	9249
4	7125	Change	11/06/1958	9929
5	7199	Change	12/02/1959	10133
6	7426	Change	13/02/1960	10431
7	271	Change	20/07/1963	1145
8	3213	Mining Law	15/06/1985	18785
9	3382	Change	25/06/1987	19498
10	4424	Change	05/08/1999	23777
11	4683	Change	26/06/2001	2444
12	5177	Change	05/06/2004	25483
13	5446	Change	04/01/2006	26043
14	5995	Change	24/06/2010	27621
15	6592	Change	04/02/2015	29271

Reference: Maral, M., 2019, p. 5-6. *Duties, Authorities and Responsibilities of the Permanent Supervisor & Evaluation of Mine Operations by Supervisors.* Istanbul Technical University Institute of Science, master's thesis, 122 p.

[3] No bag laws are added to this Schedule.

From the Land Law of 1858, the first regulation on mining, to the present day, supervisors have taken part in the production and OHS audits in mining enterprises some of the regulations in this Law include changes in the field of supervision (Yıldız, 2018; Maral, 2019, p. 6). This mining legislative development was evaluated within the supervision legislative development, and it was aimed to propose solutions for the supervision system and frequent changes in the legislation. Accordingly, in this study, "Supervision in the Development of Turkish Mining Legislation" has been examined under the following sub-titles:

• The period before the Mining Law No. 3213 was explained in two separate titles as “Period before the Mining Law No. 6309 (Period before Land Law and after Land Law)” and “Period of Mining Law No. 6309”.

• Period of Mining Law No. 3213 between 1985-2004

• (2004-2010) Period of Law Amendment No. 5177

• (2010-2015) Period of Law Amendment No. 5995

• (2015- ?) Period of Law Amendment No. 6592 and the next period (Yıldız, 2018; Maral, 2019, p. 9-10).

Thus, changes and practices on different subjects such as the “system of supervision”, "condition of appointment of supervisor", “condition of supervisor per worker in mining enterprises”, “obligation to be permanent at work”, “number of mining licenses that can be taken under the responsibility of supervision” and “whether there is a condition to have at least one supervisor in each mining enterprise” have been explained since the land law. These are given in a summary chart at the end of the study. At the same time, through the eyes of the supervisor, the legislative changes on supervision and the supervision system that the supervisor wants to apply are explained (Yıldız, 2018; Maral, 2019, p. 9). In this regard, several questions were analyzed through the SurveyMonkey program, from the "Supervisory" survey, which was conducted on 62 permanent supervisors in 2018, and the "Permanent Supervision" survey, which was conducted on 235 permanent supervisors in 2019. Afterward, solution suggestions were brought on the subject examined.

SUPERVISION IN THE DEVELOPMENT OF MINING LEGISLATION

Period before Mining Law No. 6309

In terms of the period before the Mining Law No. 6309, first of all, the supervision-like system and mining control applied before the Land Law dated 1858 were briefly mentioned. Then, the legislation period after the Land Law was explained.

Period before Land Law

The mines discovered in the regions conquered in Anatolia and the Balkans, especially during the reign of Sultan Mehmet the Conqueror, helped increase the mineral reserves and diversity of the minerals owned by the Ottoman Empire. Sensitivity about the operations and administrations of mines such as lead, iron, and tin, which are necessary for the security of the state, increased. In this period, as a result of the decision of the state in administrative and institutional terms, the regulations regarding the operation and control of the mines included in the land, which is the treasure of the state, were determined by legislation. Thus, all stages from mining employees' obligations to extracting the mines and sending them to the places where they were needed were determined by mining laws. The Ottoman Empire also benefited from the previous practices and techniques in the field of mining, as well as in land management, taxes, and the like. As a matter of fact, as seen in the Balkans, especially in Serbia, which is at advanced levels in mining, the preservation of old regulations that remained from the pre-Ottoman period and that were not against the ecclesiastics law and the fact that many technical terms used in Ottoman mining are in Slavic and German shows this (Keskin, 2011, p. 126; Altunbay, 2002, p. 791).

In Ottoman mining, apart from those who were assigned to manage the mines and were appointed by the state, who provided equipment and security to the mine, they were divided into two classes: technical personnel, workers, and craftsmen. Among these responsible employees, the "urbarar"s, which are responsible for managing the mines, providing security, and being in the masters class, were part of the qualifications of "supervisor" tasks within the scope of today's "supervisor" definition (Maral, 2019, p. 11).

In the Ottoman period, for the Keban-Ergani mines, according to the "Mine Supervisor Book" between 1776 and 1794, the custodial management method was applied continuously in the Keban Ergani mines. Accordingly, the state sent an officer, called "emin", which he had given some powers, to any mining area. It was one of their primary duties to carry out activities in the mines in a predetermined order. The foremen were the highest level staff after the "emin" of the production activities in the mines. These people supervised all the work in mining operations, such as extraction of ore from caves or wells, transport, and processing of furnaces and similar operations. The duties of these people, who had one in each mine, passed from father to son. After the foremen in the mines, the second-degree qualified personnel was the masters. The masters would do the necessary operations from the cave excavation to the baking of the ore in line with the orders they received from their foremen. The job of “Yiğitbaş” is to identify the new ore deposits in the mining area, to inform the "emin" about whether production can be made in the newly discovered mine deposits, to control the mining operations and to look at some other

miscellaneous works of mines (Yüksel, 1997, p. 31; 33; Tızlak, 1997, p. 12, 71, 110-111).

The period after the Land Law

The first legislation regulation on mining is included in the Land Code, which came into force in 1858. The first legal law is the Mining Regulation, which was taken from the French Mining Law in 1861. Although this Regulation was issued, there were no schools in the Ottoman to educate trained staff and technical staff. The need for technical staff made it necessary to apply to Europe in this regard. Thus, mining engineers from Europe were brought to improve working conditions in mines. These mining engineers were particularly employed in the operation of large-capacity mines[4] (Zaman, 2012, p. 120).

In Article 64 of the Mining Regulation of 1869 regarding engineers, the obligation of the engineers was explained in the event of an accident in a mine. According to article 65, in the event of an accident in a mine, mineworkers were obliged to immediately report to the local officials, and, to the engineer if there was a mining engineer (Çatma, 2011, p. 187). The duties of mining engineers were determined with the Mining Regulation dated September 7, 1887, and these engineers were given the authority of "scientific supervision" (Zaman, 2013, p. 26).

In the following years, it is seen that mining engineers worked as supervision and inspectors in coal mines. For example, Hüseyin Fehmi Pasha, who was appointed as mining minister, hired a group of professional mining engineers, most of whom were trained in Germany, to work in various mining operations shortly after his arrival in the coal field. With the hiring of these engineers, the government's control over coal operations has reached a new level. Safety inspections became more regular, accident reports became more frequent and careful. The report prepared by one of the inspectors is remarkable. In this report, it was revealed that he had inspected the accident sites a few days ago, and also visited places where there was no accident - to promote safe operating procedures. This report shows that the engineers' group was becoming more and more professional, and the government's determination to have increasingly safe and healthy businesses (Quataert, 2009, p. 87-88).

In order to prevent increased workplace accidents, an instruction was prepared in 1903, using the French Mining Regulation, which was the work of Commander Besim Bey, the assistant of Hasan Hüsnü Pasha, the Navy Minister. This instruction, which contains 56 articles, was distributed to the miners under the name "The Kavaid-i Umumiye (General Regulations) of Mining Operation" (General Rules of the Mine Practice). In this instruction, various jobs to be observed and followed by miners, engineers, sergeants during the work in Ereğli Mining

[4] See this topic, (Keskin, 2007).

Enterprises were defined. When the articles in Annex-2 of this Instruction are examined, it is seen that it is actually the first of the "Regulation on Safety Measures to be Taken in Mining Enterprises" as a Safety Regulation prepared according to the conditions of that day and whose items are outdated (Zaman, 2012, p. 121-122).

The Ottoman Empire emerged as a defeated country in the First World War. After the War of Independence, Turkish investors and Turkish technical staff were preferred more than foreign operators and technical staff in mining operations in Turkey. Unfortunately, the mining investor in terms of capital, and the number of technical staff in mining were insufficient. When the legal regulations after the proclamation of the Republic are taken into consideration, it is noteworthy that in the absence of technical staff, foreign technical personnel were allowed to be employed. However; compulsory obligations were imposed on mining license holders to train an equal number of Turkish technical staff in exchange for the foreign technical staff employed (Yeşilyurt, 2011, p. 80-82).

At that time, the mining engineer was inadequate in Turkey. Accordingly, the Mining and Industry Academy was established in 1924 with the aim of training mining engineers in Zonguldak, and until 1930 about 100 mining engineers were trained in this school (Yıldız, 2017b, p. 58). However, this academy was closed in 1931.

The condition of being appointed to the mining fields & having a supervisor in the mining fields

In the Ottoman Mining Regulation dated 1861, it is seen that the concept of mining engineering was fully clarified. Engineers were employed as mining head engineers (MSc) and mining engineers (Çatma, 2011, p. 186). According to the Regulation, the mine chief would be appointed for each mining operation, provided that he was responsible for the execution of all administrative and technical aspects of the operation (Regulation, Art. 411). The mining engineer (MSc/BSc) to be commissioned for the mine chief had to undergo a service period of at least 5 years in the technical work of any mining operation (Regulation, Art. 412). In addition, in the shifts where the mine chief or his deputy was not at work, responsible persons such as mining engineers (MSc/BSc), mining technicians, chief and top miners who could receive technical supervision were kept permanently in the workplace (Regulation, Art. 433).

It was obligatory to employ a mining engineer in mining operations with more than 300 employees employed in 24 hours, mining areas where more than 50000 tons of raw ore are produced annually, and where there are dangers related to human life such as fire and poison gas, mining fields that are obliged to employ more than one engineer. An assistant would be appointed for each mine and one for every 300 workers. These assistants had to be mining engineers (Regulation, Art. 411). As

will be noted, the "mine chief" system was similar to today's technical supervision system.

Supervisors' duties, powers, and responsibilities

According to the Mining Regulation, the mining engineer undertook two tasks:

1) To prepare and sign the project and activity reports,

2) To undertake the duty of scientific supervision.

According to Articles 72 and 76 of the Mining Regulation, which did not change during the period in force, the following was stated:

• To have a mining engineer in each province center by the mining administration.

• To supervise mine production by these engineers in accordance with the instructions given by the administration.

• To report the deficiencies and defects they detected in mining operations to the license holder, the province, and the mining administration.

• To take necessary precautions in case of an accident.

• To request the needs from the province and ensure that these needs are delivered to them quickly (Yeşilyurt, 2011, p. 80-82).

Period of Mining Law No. 6309

The condition of being appointed to the mining fields & having a supervisor in the mining fields

In this period, scientific supervision was regulated in the form of several regulations as follows (Yıldız, 2015a, p. 94; 2017b, p. 58):

- Mining Law and Science Supervision Regulation (SSR)[5],

- The Regulation, which entered into force in 1953[6],

- The "Regulation on OHS to be Taken in the Mining and Quarrying Operations and Tunnel Construction" prepared in accordance with the 74th article of

[5] The Regulation on Scientific Supervision was published in the OG No. 13131 on February 19, 1969.

[6] The concept of "supervisor", whose first name in the law was "Scientific Supervisor", was first published in the "Regulation on Safety Measures to be Taken in Mining Operations" which was published on August 18, 1953, and the reason for the publishing was OHS (Yıldız, 2015, p. 87; 2017b, p. 58; http: //www.resmigazete.gov.tr/).

the Labor Law abolishing the mentioned Regulation and entered into force on October 22, 1984 (Regulation)[7].

During the period of Mining Law No. 6309, technical activity had to be carried out by mining engineer supervision in the fields that received a certain amount of production permit during the exploration license period, and in operation licensed or privileged mining areas. Likewise, a technical staff who would follow the orders and instructions of the technical supervisor had to be present in these areas (Yeşilyurt, 2011, p. 80-82). As a matter of fact, when the Mining Law was first introduced, the reason for the adoption of Article 82, which regulates science supervision regarding mining activities, was as follows: *"In order to prevent the dangers posed by the operation of the mines, to ensure that the mine extraction is carried out in accordance with the technical requirements, each operation must be under the supervision of a mining engineer and have a minimum mining technician at work."*

However, there were not enough mining engineers in Turkey in 1954 when the Mining Law No. 6309 was enacted, and in the following years. Since there was no opportunity to train a mining engineer in a short time after this date, the relevant clauses of the Law article could not be applied and only one mining engineer had to be supervised in several fields. Therefore, this article, which has an acceptable provision considering the conditions of 1954, was replaced by Law No. 271 in 1963, after 9 years. Thus, due to the insufficient number of mining engineers required to be kept permanently at work for mining activities, the implementation of this clause was postponed for a period until the sufficient number of technical personnel of this nature was trained (Yıldız, 2015, p. 89).

In these years, the scientific supervision of at least one mining engineer was essential in order to organize and carry out technical activities in mining areas that had the right to operate. However, the scientific supervisor engineer did not have to be permanent at work. In addition, the number of licenses where scientific supervisor engineers could undertake scientific supervision could be limited by regulation by the Ministry of Industry. Due to the fact that such a regulation was not issued in this period, the number of licenses that could be supervised seemed unlimited (not limited)[8]. Therefore, although there were sanctions up to the cancellation of the

[7] The Ministry of Labor and Social Security was responsible for the implementation of the Regulation, which came into force with the Cabinet Decision No. 84/8428 dated October 22, 1984. The Regulation was similar to the "Mine Safety Regulation" issued in accordance with Article 55 of the Labor Law No. 3008 and entered into force on May 28, 1953, and replaced it (Yıldız, 2015a, p. 94; 2017b, p. 58).

[8] As a matter of fact, during the Mining Law No. 6309, the Council of State canceled the 4th article of the SSR, which was enacted in 1970 as it can be performed scientific supervision at most 10 mining licenses (Topaloğlu, 2003: 79, 450; Council of State 8th Department, April 13, 1970 days and Articles no. 1969/1836, Decision no. 1970/954).

license and privilege in cases contrary to Article 82 in question, the fact that the number of fields was not limited for a single supervisor caused some problems. Considering the size of Turkey borders in terms of safety, it was thought that it would not be healthy to leave the supervision, control, and measures to be taken for the OHS within an unlimited scope without seeking distance, to the responsibility of a single supervisor. Of course, it was another issue to be noted that there were not enough trained technical personnel during this period (Fındıkgil, 1966, p. 388; Yıldız, 2012, p. 187).

In the SSR, which was prepared on the basis of Article 82 of the Mining Law No. 6309 after it was amended by Law No. 271, entered into force on February 19, 1969, and then was amended twice between 1972 and 1979, the conditions of being a scientific supervisor and the appointment of a scientific supervisor were stated (Yıldız, 2015, p. 90; 2017b, p. 58). A science supervisor was obliged to perform a science supervision task only if one of the mining areas with the following conditions was found (SSR, art. 4):

a) Mining areas employing more than 300 workers a day,

b) Mining areas where more than 50000 tons of raw ore are produced annually,

c) Mining areas with important human hazards such as fire, toxic gas, etc.,

d) Mining areas where more than one engineer employment is required.

It was envisaged to appoint an assistant to assist the scientific supervisor in the quarries exceeding 300 in 24 hours. It was also envisaged that an additional assistant would be appointed for every 200 workers that were increased and that they would be mining engineers. It was mandatory under this article to have a permanent supervisor at the mining operation. As can be seen from this provision, the low number of scientific supervisors and mining engineers across the country led to the low number of mining engineers per worker as a legal requirement in the legislation.

In the article 371 of the Regulation, the characteristics sought for the person who could be a scientific supervisor were specified. Accordingly, it was compulsory that the mining engineer or professional mining engineer, who would assume the duty of a scientific supervisor, had at least 5 years of experience in the technical works of a mining operation.

The content of the Laws on which they are based is effective in the regulations of the By-Law and SSR prepared by two different institutions of the state. These two regulations, which should essentially complement each other, contradict each other in some ways. Namely:

• According to the Legislation, it is imperative that the mining engineer, who can be a scientific supervisor, has at least five years of experience. However, there

is no restriction on this matter in the regulation. Since the Mining Directorate has implemented the SSR, this condition of the Legislation has been ignored (Yıldız, 2015a, p. 94).

• Although the number of workers employed (within 1 day) is increasing in parallel with the number of workers in operations exceeding 300, mining engineers are expected to assist the scientific supervisor, but this provision has not been applied (Yıldız, 2015a, p. 94).

Duties, powers, and responsibilities of supervisors

The Regulation has generally defined the powers and responsibilities of scientific supervisors and parties. According to the SSR, at least one scientific supervisor is mandatory for each mining area (SSR, art.3). In order to carry out the orders and instructions to be given by the scientific supervisor working in the mining licenses within the framework of the principles of mining technique and legislation, it was necessary to have at least one technical staff permanent at work. However, the same technical staff could perform the task of constantly working at only one mining licenses. It was not appropriate to give this task belonging to more than one mining license area to the same technical staff (SSR, art.6). Scientific supervision could be carried out by a scientific supervisor within a maximum of 10 mining licenses within the same city or within the boundaries of up to 5 cities adjacent to each other directly or through each other (SSR, art.4).

In the legislation, scientific supervisor and supervisor were defined as follows:

"Scientific supervisor: A mining engineer or a professional mining engineer assigned to mine legislation who is responsible for fulfilling the requirements of the OHS and operating the business within the framework of technical principles."

"Supervisor: A person who is at least primary school graduates with the necessary experience and knowledge, who is assigned in writing to carry out the works deemed necessary by the scientific supervisor or to monitor them."

In the 4th article of the Legislation, the regulation regarding the responsibility of the scientific supervisor was as follows: *"At least every 15 days, the scientific supervisor has to inspect the workers' workplaces (quarries) and sign the results in the Notary approved Scientific Supervisor Report Book together with the suggestions and measures to be foreseen. The employer is responsible for the absence of supervision and for not fulfilling suggestions and measures."*

In addition to this article, the duties of the science supervisor are specified in the 2nd part of the Legislation. However, in this period, in the mining law and the regulation prepared as a requirement of it, the duty of scientific supervisor was defined quite abstractly only as "arrangement and maintenance of the technical activity required for the mine operation" (Yıldız, 2015a, p. 94).

According to Yıldız, these provisions were prepared solely for the purpose of OHS but did not have a feature for the way the mine was operated. However, although the provision is feasible in terms of the duration, form, and responsibilities of the audit, this provision was used only to find the culprit in cases such as an accident (Yıldız, 2015a, p. 94).

Due to these gaps of the SSR, there is an imperative in the mining operations that the scientific supervisor is legally "indispensable", but in practice "it does not matter if there is a scientific supervisor in mining operations or not." As a result, some operating license holders were deemed to have fulfilled their obligations in accordance with the relevant provisions of the Mining Law by appointing and dismissing the scientific supervisor (Yıldız, 2015a, p. 94; 2017a, p. 98).

Period of Mining Law No. 3213 between 1985 and 2004

The condition of being appointed to mining fields and having a supervisor

Article 371 of the Legislation was also valid during this period. In other words, *"the scientific supervisor had to have at least 5 years of experience in the technical work of a mining operation".*

According to article 370 titled "Assistant Scientific Supervisor", in operations with more than 300 employees in 24 hours; one assistant would be assigned to assist the scientific supervisor, and one additional assistant for every 200 workers. These were supposed to be mining engineers and these provisions were the same as the Mining Law period 6309, which was amended by Law No. 271.

Duties, powers, and responsibilities of supervisors

Supervision and technical supervisor definitions were made under the heading "Definitions" in Article 3 of the Mining Law No. 3213, which was amended in 1985:

"Supervision: Supervising of the execution of operations in accordance with their technique and safety regulations",

"Supervisor: Responsible and competent mining engineer who supervises operations in terms of technical and safety".

As stated in the subheading 2.2.2, the duties, powers and responsibilities, definition, and qualifications of the scientific supervisor were subject to the provisions in the Legislation and the SSR.

In Article 31 of Mining Law, a regulation under the heading ''scientific supervisor at the operations'' was made. Accordingly, *"The operating license holder must appoint at least one mining engineer as a supervisor during the operation. The*

duties, powers, responsibilities, and other issues of the scientific supervisor are specified in the regulation. "

Amendments were made in Article 21 of the "Regulation on the Application of Mining Law" published in the OG no.18850 dated August 22, 1985: In accordance with Article 31 of the Mining Law, operation and ore production could not be carried out in areas that do not have scientific supervision[9] (This Regulation, art. 21).

Only mining engineers could be scientific supervisors. In addition, the implementing regulation of the mining law stipulated that a mining engineer could take on the duty of scientific supervising in up to 10 mining operating licenses. According to Topaloglu, this limitation was positive compared to the previous period. Regardless, limiting the duty of the scientific supervisor only to the number of mining licenses would hardly be considered fair (Topaloglu, 2003, p. 79). Indeed, it was not possible for a supervisor to regionally supervise the limited 10 or -close to this number- license areas within Turkey by putting importance respectively during this regulation period. Even if attention was paid to the appointment of the aforementioned supervisor to the areas close to the same area and its surroundings in practice, it would undoubtedly be appropriate to mention this in the regulation (Yıldız, 2012, p. 198).

By Mining Law No. 3213, the duties and responsibilities of the scientific supervisor were as follows: operating activities could not be carried out before a scientific supervisor was appointed. The scientific supervisor would supervise mining activities on behalf of the state, and prepare the operating report every year in March, the production mapping and the production program for the next year and give them to the General Directorate of Mining Affairs (MIGEM) in March (Yıldız et al., 2003, p. 282).

According to Article 4 where the supervision of the scientific supervisor is specified in the Regulation; the scientific supervisor had to supervise the places where mining operations have workers working once every 15 days. The scientific supervisor reported the deficiencies and failures, suggestions and precautions that he saw in the inspections he made in the license field, and sent a copy to the license holder and processed a sample to the notary approved scientific supervision report book. The scientific supervisor, who did not report the deficiencies and faults that he/she encountered at the operation, would be responsible for the provisions of the Legislation.

Therefore, the scientific supervisor adhered to the provisions of the Legislation as well as the regulation on the implementation of the Mining Law in terms of duties, power, and responsibility.

[9] In such cases, legal responsibilities belonged to the license holder until the new scientific supervisor was appointed.

The definition of the "permanent supervisor" was made in the same Legislation as *"a person appointed under the orders and instructions of the scientific supervisor and appointed in accordance with Article 82 of the Mining Law".* This reference to the Mining Law No. 6309 corresponds to Articles 21 and 31 in the Mining Law No. 3213. According to Article 372, a permanent supervisor is required to be present at operations all the time[10].

It was the responsibility of the scientific supervisor to prepare the directives specified in the Legislation regarding operating activities at the mining license area and to make written warnings and suggestions as stated in the legislation. In other words, verbal warnings and suggestions had no legal validity (Yıldız et al., 2003, p. 282).

Scientific supervision duty would come to an end due to the reasons such as the resignation of the mining engineer, the employer's termination of the supervisor's contract, the transfer of the license. According to the Regulations, there was an obligation to appoint a new scientific supervisor within 15 days in the place of scientific supervisor whose duty was somehow terminated (Yıldız, 2012, p. 198).

Therefore, as in the previous period, in this period too, the owner of the operating license was obliged to assign a scientific supervisor to be able to carry out mine operations and produce ore (Mining Law art. 31). Even though the mining was operated through royalty, the obligation to appoint a supervisor belonged to the license holder (Topaloglu, 2003, p. 78).

On the other hand, until the Mining Law No. 3213 was changed with Law No. 5177 in 2004, the license holder was the employer of the *scientific supervisor*. The employer had the opportunity to dismiss the supervisor as stated in the regulation on the enforcement of the law. Considering the relevant articles of the laws regulating business life, it is understood that this fact has an important role in the fact that scientific supervision does not work the way it should be in practice. In summary, the Law in this period did not include regulations that would make the supervisor independent of the license holder. On the other hand, in the legislation No. 6309 period, it was mentioned that the scientific supervision practice was due to the lack of a sufficient number of mining engineers in Turkey. However, especially starting from the period of Mining Law No. 3213 that came into force in 1985, it would be more accurate to impose an obligation to employ permanent mining engineer instead of scientific supervisions in Turkey where there are more mining engineers than needed (Köse, 1992, p. 36, 85).

[10] As can be seen, during this legislative period, the permanent supervisor was working under the command of the scientific supervisor. The permanent supervisor was somewhat similar to the OHS specialist in the 2010-2015 period. See over the authority and responsibility conflicts of the supervisor and the OHS specialist (Maral, 2019, p. 77-81).

A scientific supervisor had to enter the deficiencies and malfunctions, suggestions and precautions related to the activities within the license area where he served, into the "Scientific Supervisor Report Book", which is required to be at the operation, approved by the notary public. Scientific supervisor was responsible for ''notifying in written'' the deficiencies and malfunctions regarding the provisions of the "regulations". The license holder was responsible for following the suggestions and measures (Yıldız et al., 2003, p. 289).

In this period, it is the mining engineer (MSc/BSc) who takes the "scientific supervisor" fee from the license holder and ensures that mining activities on behalf of the state continue within the framework of the principles of OHS without resource loss. The current legal regulation and practice had the contradiction of the supervising of the "employer" by the "working area" as it is today. With its situation in this way, according to (Yıldız et al., 2003, p. 290), it was a mistake to expect the scientific supervision system to work properly.

Moreover, during this period, the Regulation, which came into force before the Mining Law No. 3213, was still referring to the abolished Mining Law No. 6309. For this reason, the disconnection and inconsistencies between the Regulations and the "supervision" provisions in the mining legislation caused the concept of "supervision" to become ambiguous (MMO, 1995).

Other recommendations regarding the solution of the problem during this period were as follows: The concept of *scientific supervision*, with its powers and responsibilities, brought out the necessity that the powers and responsibilities of an engineer who continuously was employed in mining activities should not be confused. The social rights of the scientific supervisor had to be legally guaranteed and the number of licenses to which the scientific supervisor would be appointed, the distance of the licenses to each other had to be redefined according to the size of the activity and the nature of the activity. In the long term, it was necessary to make the required legal arrangements for each mining activity to be maintained in accordance with its technique under the supervision of a mining engineer (Yıldız et al., 2003, p. 290).

Indeed, in this period during the operational phase, for some reason, it was not possible for the Ministry of Labor inspectors to check whether the mine was working in accordance with the OHS legislation, especially for the investigators' areas of expertise. The fact that the mining engineer, who was in charge of the operation constantly and responsible for everything, also assumed the duty of scientific supervising brought along great drawbacks as well. For this reason, Guyaguler stated that it would be more appropriate for the employer to assign a separate mining engineer as a scientific supervisor, for the nature of the work (Güyagüler, 2002, p. 51). An event called "workplace blindness" inevitably occurs in people who are constantly working in the same field. In addition, the supervisor may have difficulty in making some warnings and taking measures (Boran, 2001, p.

187)[11]. Following these considerations, it is seen that in the period of Law No. 5177, *technical supervision* system, whose conditions are more different, was introduced instead of scientific supervision.

Period of Law Amendment No 5177

The amendments introduced in Article 31 of the Mining Law with the Law No. 5177 are as follows: With the new law, the definition of "*technical supervisor*" was introduced instead of "*scientific supervisor*". It is envisaged that the production in the fields will be carried out under the supervision of a mining engineer and that the mining engineer will also assume the obligations of the OHS Act. Most importantly, the number of mining engineers to be employed within the scope of the concept of a permanent supervisor is associated with the size of the operation. These amendments introduced by law are evaluated in the following sub-headings (Yıldız, 2012, p. 208).

The condition of being appointed to mining fields and having a supervisor

Perhaps the most important consideration of the regulation brought to Article 31 is the obligation to employ technical or permanent supervisors for the licensee to be able to operate in mine operations and to produce ores. According to the Mining Law No. 3213, along with the fact that it was easier to become a technical supervisor, the powers and responsibilities of the supervisor were increased with the amendment of the Law No. 5177. In addition, the work of mining operations has become tightly controllable through *permanent supervision* practice. A 2-year experience is required for mining engineers to be assigned to dangerous operations[12] (Yıldız, 2012, p. 208).

According to the Directory of Quarries, it was not compulsory to employ technical supervisors in the quarries. With Law No. 5177, the quarries were included in the Mining Law, and it was made compulsory to have technical supervisors for every area in production. Especially the obligation to employ technical supervisors regardless of the mining group was extremely appropriate in this period. Thus, scientific and technical supervision of mining activities were provided (Yıldız, 2012, p. 208).

[11] According to Boran, seeing scientific supervision as a formality that employs mining engineers due to legal constraints during this period would have caused many problems both to businesses and to mining engineers. Such an approach is also a loss for the country's economy. It was hardly possible for a mining engineer to inspect 10 license sites every 15 days during this period. Boran thought that considering the number of mining engineers in Turkey, the number of license fields should be limited to 5 (Boran, 2001: 184, 187).

[12] Required conditions for undertaking technical supervision are specified in Article 112 of the abolished MLIR.

As explained in the previous legislation period, until 2004, the duties, powers, and responsibilities of scientific supervision were regulated by the Regulations[13]. After 2004, amendments were prepared and put into effect by the Ministry of Labor and Social Security instead of this regulation. Thus, regulations related to scientific supervision were regulated under the mining law and regulation under the name of "technical supervisor" and "permanent supervisor". The phrase "scientific supervision" was changed to "technical supervision" in 2004, as it also evoked another profession. In the period of Law No. 5177, the concept of technical supervision was disciplined compared to the past, and those who were scientific supervisors as additional jobs away from the engineering discipline in the market had to abandon supervision or perform this task as prescribed by law (Yıldız, 2015a, p. 98; 2017b, p. 61).

According to Article 31, in the Mining Law No. 3213 amended by Law No. 5177, a permanent mining engineer was not required for each mine. However, in the regulation to be issued by the Ministry depending on the size of the operation, it is understood that the size of the operations that need permanent employment will be determined (Gülan, 2008, p. 112). However, the situation changes as a technical supervisor. At least one technical supervisor should be assigned to each mining operating license, according to Article 111 of Mining Law Implementation Regulations (MLIR), which was prepared based on the temporary Article 8 of the Mining Law No. 3213, amended by Law No. 5177.

By the license holder for the appointment of a technical supervisor; The technical supervisor can be assigned to the entire mining license area or a department of the enterprise in the license area (MLIR, art.108). A mining engineer may take the technical supervisor duty at a maximum of ten license areas, five from the I (a) mineral group, and five from the other groups. Even if there is no supervision duty in the group I (a), he/she can serve up to five supervision duties for I (b), IInd, IIIrd, IVth and Vth groups. In cases where there is no technical supervision duty in other groups, this number may be ten at most for group I (a) (MLIR, art.109).

[13] The aforementioned Regulation was abolished on July 25, 2014. Immediately before the regulation was abolished, a regulation specific to the mining sector, containing OHS rules, based on primary protection, prioritizing and emphasizing technical measures, was published on September 19, 2013, under the name of "Regulation on OHS in Mining Operations". Kayınova thinks that this regulation is almost a copy of the 1984 Regulation. Kayınova also states that this regulation is a compilation of the 1974 OHS Regulation and the old regulations enacted based on this regulation and that it was created by including a few other old regulations. The author points out that this regulation is a continuation of the past rather than the current scientific and legal facts (Kayınova, 2019, p. 644).

As a result of the abolition of the Directory of Quarries, all mines were included in the scope of the Mining Law, revealing the necessity to be kept more areas under control.

Thus, in the studies carried out while the Law No. 5177 was made, the data of the license and the Chamber of Mining Engineers of Turkey (MMO) were evaluated together, and the number of licenses that the technical supervisor would be responsible for was determined by MLIR based on statistical data which are the license number 5+5 that technical supervisor would be responsible for (Yıldız, 2015, p. 98; 2017b, p. 61). According to this, in the event that the mining engineers, whose permanent supervision duties are fulfilled, provide the conditions specified in Article 112 of the regulation, they are also allowed to undertake technical supervision duty for that operation with Article 110 of the aforementioned regulation. However, according to Baycik, the fact that the supervisors in this situation could not exercise their right to perform technical supervision in up to 10 license areas, which were recognized by article 109 of this regulation was accurate (Baycık, 2006, p. 143).

At least one mining engineer being assigned to each license of operation in the studies carried out while the Law No. 5177 was made in 2004 was discussed together with the concepts such as “adjacent area”, “adjacent license”, “adjacent city”. However, due to the fact that there is a large number of seasonal workers in Turkey, this proposal was not accepted by mining companies on the grounds that their employees would suffer. See (Yıldız, 2015, p. 98, 104, 106, p. 2017b, p. 61).

The situations in which the mining engineer will be employed as a permanent supervisor are:

a) Operations employing at least thirty workers,

b) Operations working with underground production method employing at least fifteen workers (MLIR, art.110).

Thus, according to Article 110 of MLIR, in open-pits with at least 30 workers and underground mines with at least 15 workers, a mining engineer separate from *technical supervisor* was obliged to be appointed as a permanent supervisor, otherwise, production would be set forth to be halted (Baycık, 2006, p. 143).

With Law No. 5177, "technical supervision" was envisaged in order to provide more effective control and OHS in mines. In this context, by the Regulation, education, and certification obligations were introduced in the MMO. In order for mining engineers to perform their technical supervision duties in accordance with the legislation, basic information that was not previously available in most universities started to be provided within the scope of “mining law” (Yıldız, 2015, p. 99-100).

However, in this period, as in the past scientific supervision system, according to Necati Yıldız, technical supervisor was “mining engineer who was

appointed by the license holder, who took his salary from the license holder who assigned him, who was dismissed when he did not come to his work, who would supervise (or could not supervise) the miner in the name of the state, who was responsible for everything towards the state, and assumed a public service" (Yıldız, 2015, p. 99).

At this point, it should be noted that the provisions of the Regulation 110/3 and 111/d stipulated that if, respectively, permanent and technical supervisors fulfill the conditions to become occupational safety specialists stated in the law no. 4857, they can also work as occupational safety specialists in mining license areas that employ less than 300 workers. However, according to Baycik, the aforementioned provisions must be rewritten. As a matter of fact, the features required to be an occupational safety specialist are not regulated by the Labor Law, but by the Occupational Safety Engineers Directive. Accordingly, permanent supervisors and technical supervisors who have occupational safety specialization certificates issued by the ministry can also work in the same mining license area as occupational safety specialists. Due to this situation, Baycik suggested adding a provision to the regulation (Baycık, 2006, p. 143-144) that due to the vital importance of their duties, such supervisors can only work in a single license area.

Duties, powers, and responsibilities of supervisors

With the Law No. 5177 amended in 2004, the definitions regarding supervisor of the amended Mining Law No. 3213 were preserved under the technical supervision heading in Article 31.

Engineers, who have assumed permanent supervision, can also perform technical supervision for that operation if they meet the necessary conditions. However, in this case, they cannot take on technical or permanent supervision duties at other mining license areas. Thus, it is allowed for supervisors to work as technical supervisors in a number of different mining areas, as permitted by the legislation, provided that they do not constantly supervise an operation.

In cases where the permanent employment conditions of the mining engineer occur, production cannot be made in an area without employing permanent supervisors. If it is detected that production is carried out without employing permanent supervision, the guarantee is transferred to the treasury as income, and the activity is stopped until a permanent supervisor is employed.

In Article 112 of MLIR, it is projected that the technical supervisor will carry out his/her duties within the framework of the Mining Law No. 3213 and the Labor Law No. 4857, he/she will supervise the activities and productions in the license area at least once in 15 days, and he/she will record his/her detections and suggestions to the notary approved technical supervisor book (Baycık, 2006, p. 143).

The Law Amendment Period No. 5995

The condition of being appointed to mining fields and having a supervisor

With Law No. 5995, for the first time, it is envisaged to assign technical personnel in mining license areas. As a rule, permanent supervisors must be mining engineers. However, it is projected that the technically employed technical staff[14] can also act as a permanent supervisor if he/she meets the requirements (MAIR, art.146/6). Thus, geology and geophysical engineers working as technical staff are also enabled to be appointed as permanent supervisors, provided that there is a mining engineer who is constantly employed in the operation (Yıldız, 2012, p. 209; MAIR, art.134).

In addition, there was a regulation stating that the engineers, who assumed permanent supervisor duties, could also perform technical supervisor duties for that operation if they meet the necessary conditions, but in this case, they would not be able to assume permanent or technical supervisor duties in other license areas. However, this regulation has been converted into the form of *"engineers who have undertaken permanent supervision duty cannot be appointed as technical supervisors"* with the Mining Activities Implementation Regulation (MAIR), which is the implementation regulation of Law No. 5995 (Yeşilyurt, 2011, p. 82).

In 2010, in the Mining Law No. 5995, the definitions related to supervision did not change. Requirements for assuming permanent supervision were specified in MAIR art.140. It is the same with the conditions specified in MLIR art.132. Only art.132/c is not required out of these conditions.

The first two paragraphs of Article 31 of the Mining Law titled "Technical Supervision" have been changed. The regulations are as follows:

Law No. 5995 brought down the mandatory limits set for the permanent supervisor prior to this law, by requiring the employment of at least one permanent supervisor in underground production methods and mining operations employing at least 15 workers. It can be thought that this change will have a positive effect on the prevention of occupational accidents as well as it will be beneficial for the employment of mining engineers (Yıldız, 2012, p. 209).

It is obligatory to submit the documents regarding the license area that the technical supervision fee for the previous year has been paid to MIGEM every year

[14] The license areas to be employed by technical staff are as follows:
a) In operations that employ at least 15 workers within the scope of mining activity, excluding those working in the facilities,
b) In operations operating underground production method,
c) It is obligatory to employ technical staff in every shift in the operations working in shifts (MAIR art.146 (1)).

until the end of April. As for the date of termination of the duty, the supervisors who have completed their duties must give the documents that the technical supervision fees for the previous year and the working months of the current year have been paid in full to MIGEM. In case the payment documents are not given, the license holder will be warned and asked to make the payment within 2 months, if he/she does not fulfill the necessary payment in this period, the deposit will be transferred to the treasury as income. With this arrangement, payment security is provided to the technical supervisor (Yeşilyurt, 2011, p. 80-82).

However, as the license holder paid the technical supervisor's payment during this period, the technical supervisor's power to convert supervision to sanction against the license holder was weak. Therefore, the technical supervisor could not be expected to fulfill all the responsibilities imposed on him/her under the Mining Law. However, the situation was somewhat different in royalty (Yeşilyurt, 2015, p. 112).

Duties, powers, and responsibilities of supervisors

With the Law No. 5995 came into force in 2010, the "definitions" section regarding supervision in Mining law did not change. According to this, "Technical Supervisor" is: *"Responsible and competent mining engineer who supervises the operations in terms of technical and safety".*

According to MAIR art.133, the number of licenses that could be taken as technical supervision was the same as the period of Law No. 5177 (the previous one). The duties of the technical supervisor according to the Mining Law are as follows: To prepare an activity report according to Article 24 of the Mining Law, and to prepare production mapping, geophysical, geological, hydrogeological surveys, maps, sections, reports and the like.

According to MAIR, the technical supervisor is responsible and obliged to perform the duties specified in the Law and related regulations by supervising the mining operations in terms of technical and safety (MAIR, art.130/1). These powers and responsibilities are as follows: *"Production cannot be made in license areas where there is no technical supervision. The technical supervisor carries out the supervision duty under the provisions of the Law. The technical supervisor is obliged to supervise the activities and production of the license area to which he/she is appointed and responsible for, at least once in fifteen days and to write down his/her findings and suggestions in the technical supervisor book"*(MAIR, art.134).

In the event that mining operation activities are carried out without a technical supervisor, the license guarantee is transferred to the treasury as income and the activity will be stopped. If mining operation activities are carried out without

permanent supervisor and/or technical staff, only the activity will be stopped[15] (Yeşilyurt, 2011, p. 80-82).

The technical supervisor could also serve as an occupational safety specialist if he/she fulfilled the conditions to become an occupational safety specialist stated in Labor Law No. 4857. However, an occupational safety specialist mining engineer is also assigned to areas employing more than 300 workers (Yüksel, 2010).

Namely; In the second paragraph of Article 31 of the Law No. 5995 says: If the permanent mining engineer employed in the operation meets the conditions determined by the laws and regulations, he/she can fulfill the duties and responsibilities assumed by the engineers or technical staff assigned with the occupational safety stated in Article 81 of the Labor Law dated May 22, 2003, no. 4857. Article of the law includes permanent supervisor, technical supervisor, and technical staff (Yeşilyurt, 2011, p. 80-82).

Law Amendment Period No. 6592

The condition of being appointed to mining fields and having a supervisor

The "technical supervisor" application was abolished with the Mining Law No. 3213 amended by the Law No. 6592 published in the OG no. 29271 dated February 18, 2015. Thus, only the "permanent supervisor" practice that was previously available continues. In this way, "permanent supervisor employment is mandatory instead of mining engineers who should be employed as technical supervisor" (Law No. 6592 art.16).

In order to be a permanent supervisor, mining engineers in coal operations operating with an underground operation method have to be working as mining engineers in underground coal operations for at least five years. This requirement is at least 3 years in non-coal operations. Apart from the mining engineering diploma; a permanent supervisor certificate obtained within the scope of the training program organized by MIGEM or public institution, universities, vocational chamber, association, or foundations authorized by MIGEM has been obligatory (Mining Regulation art.124).

According to the Mining Regulation, "permanent supervisor" is defined as: "Mining engineer who is requested to be appointed permanently in the operation and whose appointment is approved by MAPEG".

[15] In this case, the operation may be permitted if the guarantee is renewed after the mining engineer is employed or supervised.

With these regulations, it is aimed to carry out mining activities under the supervision of a permanently employed mining engineer, thus minimizing accidents by carrying out activities technically and reliably.

Thus, mining de facto under the supervision and control of a mining engineer, who was a *permanent supervisor* instead of remote control, has become compulsory, as in past scientific and technical supervision practices (Kula, 2015, p. 273-274).

Prior to this amendment, underground production methods in mining license areas and open-pits employing at least 15 workers had to continuously employ a minimum mining engineer. With this amendment of the Law, it was also obliged to employ engineers from other professional disciplines, with a minimum of "permanent" mining engineers in their operating activities in mining license areas and considering their structural status[16] .

In Article 127 of the Mining Regulation, license areas where a permanent supervisor can take part are specified in detail:

"(2) Except for the licenses operated by underground production method; to three licenses, at most, one permanent supervisor can be appointed to the same license holder whose permitted operating areas have the air distance 20 km at most and whose total production amount is 15000 m^3/year in II. Group (b) mining license and 300000 tons/year in other group license[17][18].

(3) In the event that the quarry where production activities are carried out in open-pits continues within the adjacent licenses of the same license holder, a permanent supervisor may be appointed with the determination of the MIGEM.

[16] Because, according to the article 5 of the Regulation on the Amendment to the Regulation on OHS in the Mining Operations, which entered into force on March 10, 2015; "Any work to be done in the workplace is done under the supervision and responsibility of the authorized person. Jobs with special risk are performed only by competent people who receive special training in these jobs and in accordance with the instructions. " (Turkey Bar Association, 2015, p. 82).

[17] The "air distance" used in the regulation is not a legal term. Therefore, according to Yıldız, it would be more appropriate to use the expression "20 km distance between the nearest corner points" in the Regulation. Also, it is wrong to reconcile the condition related to the appointment of a permanent supervisor with the amount of production (Yıldız, 2017b, p. 64).

[18] In the regulation, it would be more appropriate to use short and clear expressions such as "Permanent supervisor can belong to the same license holder and can work in maximum 3 license fields in adjacent provinces". First of all, it is against the Mining Law that permanent supervisors work in more than one license area (Yıldız, 2017b, p. 64).

(4) In accordance with the sixth paragraph of Article 29 of the Law, it is sufficient to assign a single permanent supervisor to the adjacent areas whose project is accepted by the MIGEM.

(5) In the raw material production permit areas, for the same Project that constitutes base to raw material production permit request, only one permanent supervisor can be appointed within 20 km. However, the number of assigned raw material production permits cannot exceed five.

(6) In the event that there is more than one royalty holder/activity in the same license area, it is obligatory to appoint a permanent supervisor for each royalty holder/activity. "

The situations in which the technical staff[19] will be employed are as follows: *"If the number of employees working in a shift at operations where mining activities are carried out is below eighty, then a mining engineer must be employed in each shift. However, at least one technical staff and one mining engineer must be employed for eighty employees per shift."* (Mine Regulation Art. 131 (1) (a)).[20]

Depending on the size of the operation, the obligation to employ mining engineers in each shift for operations working in more than one shift can be evaluated as a positive legislative change in terms of permanent supervision practices (Sert & Sahverdioglu, 2015, p. 200). Above all the purpose of removing the technical supervisor practice and replacing it with the permanent supervisor is as follows: It is considered to prevent all the problems of not being able to provide sufficient control because of the technical supervisors not being permanently in the mining operations and/or going to the mining operations in various and short periods of time (Güray & Abut, 2015, p. 163).

Before, in the mining law, technical supervisors were able to supervise 10 mining areas in total, provided that there were 5 mines and 5 quarries. As a result of the new amendments, with the abolition of technical supervision, a permanent

[19] Mining, geology, geophysics and if necessary, map and cadastral engineers and other engineers can be assigned as technical staff to ensure that the activities in the operation are carried out in accordance with the project, in line with the recommendations of the permanent supervisor (Mining Regulation art.129 (1)).

[20] In the Mining Regulation, the provisions under the license areas in which technical personnel are to be employed are not clear. According to Yıldız, this arrangement should have been prepared in a similar way to the following:

" • It is sufficient to assign at least 1 permanent supervisor to each license area.

• A mining engineer is employed for each shift in operations operating 2 and 3 shifts.

• An additional mining engineer is also employed for every 50 workers after 51 workers in shifts.

• In addition to mining engineers, technical staff is employed for every 50 workers after 51 workers working in shifts. " (Yıldız, 2017b, p. 65).

supervisor will be employed in each mining operation, thus it is estimated that the employment of mining engineers will increase[21] (Sert & Şahverdioğlu, 2015, p. 199).

In addition, in Article 127 of the Mining Regulation, the execution of paragraphs 2, 3, 4, and 5 for the appointment of a permanent supervisor to operations in more than one license area has been suspended with the lawsuit filed by MMO. Therefore, the necessity to appoint a permanent supervisor to each license in every condition occurred. According to TMD (Turkey Miners Association), this situation leads to the unjust suffering of license holders in some places, as it causes appointment of up to four permanent supervisors in a mining operation (TMD, 2019, p. 58; 2020, p. 24).

According to Yıldız, the necessity of a permanent supervisor instead of a technical supervisor in the recent period will create instability in mining enterprises that work seasonally for 3-5 months. Indeed, in Turkey's rural areas where climatic conditions are not suitable to work in the winter months as the Eastern Anatolia Region, working is only possible for 3-5 months in a year at high altitudes. A permanent supervision system is a practice that should be in the enterprises that work regularly and produce for 12 months a year. Multiple mining engineers are already employed in these enterprises. In some quarry sand and mining enterprises with limited production capacity, activities can be carried out at intervals according to market demand. Under these conditions, the fact that the permanent supervisor employment to be done is criticized by the author (Yıldız, 2017a, p. 98-100).

According to Kayadelen, it can be said that it is appropriate to switch to permanent supervisor practice since technical supervisors are not constantly present in mining areas. However, it should not be overlooked that the main problem in the practice of technical supervisor is that the technical supervisors are paid by employers, and that the technical supervisor is dependent on the employer and that technical supervisor can not freely decide, and explain their thoughts in order not to lose their jobs (Kayadelen, 2015). This situation also applies to the permanent supervisor in the new period.

On the other hand, with the abolition of technical supervision, the license holder's obligation to pay the salary to both permanent and technical supervisors disappeared.

However, the situation that the supervisor receives his salary from the employer, so he/she may influence the supervisor in some of his/her decisions is ignored. At this point, according to Sert and Sahverdioglu, if permanent supervisors

[21] At this point, according to the Tufan, it will be beneficial if the persons who have received permanent supervision and mining engineering training with minimum 5 years experience in each mining, are employed by mining operations, with 20 permanent workers per shift, and 1 permanent supervisor (Tufan, 2015, p. 14-15).

receive their wages from a fund to be created by MAPEG, it will make them less affected in terms of job security and inspections. However, as in previous periods, there are no developments regarding this issue in the amendments of the Law No. 6592 (Sert & Sahverdioglu, p. 200-201).

Eskikaya states that even if the supervisor receives the wages from a fund, not directly from the employer, objectivity cannot be expected again if the employer is hired or dismissed by the employee (Eskikaya, 2015, p. 42). Yıldız has a similar view. According to the author, even if it is thought that the permanent supervisor will receive his/her payment after such an arrangement, he/she will not be able to provide a solution to the current problem if this practice could be politicized (Yıldız, 2017a, p. 100).

Duties, Powers, and responsibilities of supervisor

In the previous period, the technical supervisor was obliged to regularly supervise the activities in the license area he/she was appointed to record his/her findings and suggestions into the technical supervisor book. The technical supervisor and license holder or his/her deputy wouldsignthe technical supervisor journal. The term "technical supervisor" in this article in the previous period was completely abolished and the term "*permanent supervisor*" was used instead (Sert & Sahverdioglu, 2015, p. 179).

Within the scope of ensuring OHS management in mines, the areas of responsibility of permanent supervisors, occupational safety experts, and authorized legal entities operating in mining enterprises should be determined in detail in the regulations in a way that they won't coincide (Sert & Sahverdioğlu, 2015, p. 202). It was decided that how permanent supervisors would be appointed, what their duties, powers, and responsibilities would be, how their training would be, how their duties would end in law were to be determined by a regulation to be made.

However, a special Regulation on this issue could not be issued in the past period, and until 2017, the process was continued with the "Circular" published by MAPEG. References were made to the MAIR, which came into force during the current Law of 5995, regarding the permanent supervisors appointed in this "Circular". The aforementioned implementing regulation has been abolished. Mining Regulation was put into effect on September 21, 2017, instead of this Regulation. After this regulation, the fixed ones in the system, which are applied in permanent supervision, are as follows:

• It is the license holder who hires the permanent supervisor and pays his/her salary.

• The authorization to dismiss the permanent supervisor is also in the license holder.

• By law, MAPEG appoints a permanent supervisor.

• MMO provides the documents required for the appointment.

• Mining Law and license holder determine the duties and responsibilities of the permanent supervisor. In this system, the permanent supervisor is responsible for the license holder on the one hand and the Mining Law on the other (Yıldız N., 2017b, p. 65).

SUPERVISION SYSTEM TODAY & SUGGESTIONS ON SUPERVISION SYSTEM

A summary of supervision systems and their applications in the development of Turkish mining legislation is given below (Table 1).

Table 1[22]: Supervision systems/practices in legislative development

Mining law period	Supervision system	Condition to appoint a supervisor	Supervision condition per employee	Condition to have at least one supervisor in each mining operation	Condition to be constantly at work	Number of mining license that can be taken under supervision

[22] This Table does not show any changes in the subject of "supervisor's salary from the license holder/state" and "filling the supervisor's book". In the first, especially if we exclude the Ottoman period before the Republican period, there is the practice that the supervisor receives his salary from the license holder, in all periods examined. In the second, we can find that the supervisor book is obligatory in almost all legislative periods, especially in the Republic period.

Period before the Mining Law No. 6309 (1858-1956)	Mine chief	There is no requirement to be a mining engineer.	Mine that employs 300 workers per day/or produce more than 50 thousand tons of crude ore per year, or contain significant and life-threatening hazards such as poison gas.	None. mine chief + (for every rising 300 workers) requirement to have auxiliary mining engineers	The mine chief is not obliged to be constantly at work.	There was no such license limitation.
The first period of Mining Law No. 6309 (1954-1963)	Scientific supervision	Requirement to have at least 5 years of service period as a Mining Engineer	Same with the above	None. However, it is obligatory to have technical supervisor + technical staff	Same with the above	Science supervision at maximum 10 mining license within the boundary of up to five provinces
Period of Law No. 271 (1963-1969))	Scientific Supervision	The condition in the previous period was valid	Same with the above	No. However, in addition to the science supervisor in mining operations that exceed 300 workers, requirement to employ auxiliary mining engineers (for every increasing 200 workers)	No obligation for the Science supervisor engineer to be constantly at work	There is no license limit condition to work.

Period of SSR (1969-1985)	Scientific Supervision	No condition	Same with the above	Employment of at least one science supervisor is mandatory.	No obligation for science supervisor engineer but for the technical staff to be constantly at work.	Science supervision duty at most 5 non-neighboring provinces, and at most 10 neighboring provinces
Period of Mining Law No. 3213 (1985-2004))	Science supervision + permanent supervision	Requirement for min. 5 years experience as a mining engineer	Same with the above	Employment of at least one "science supervisor" is mandatory. In addition, the obligation to have "auxiliary mining engineers" in operations exceeding 300 workers (for each increasing 200 workers).	At least every 15 days, to supervise the worker-employed areas of the mine	Science supervision of a mining engineer in up to 10 license

Period of Law No. 5177 (2004-2010)	Science supervision + permanent supervision	For technical supervision; a) (by MMO) training certificate in aboveground mining enterprises b) To have (at least) two years of experience in underground mining operations.	a) Enterprises employing at least 30 workers, b) Enterprises operating with underground production method employing at least 15 workers.	The obligation to have at least one "permanent supervisor" in mining operations with the specified conditions and at least one technical supervisor in those who do not meet these conditions.	The obligation to be constantly present in terms of a permanent supervisor, in terms of a technical supervisor, at least every 15 days, to supervise the workplaces of the mine.	A mining engineer can assume technical supervision in up to 10 licenses, provided that I (a) is 5 and 5 is from other groups. Even if there is no supervision duty in group I (a), I (b), IInd, IIIrd, IVth, and Vth can assume up to 5 supervise duties for groups. In cases where there is no technical supervision duty in other groups, this number can be a maximum 10 for group I (a).

Period of Law No. 5995 (2010-2015)	Technical supervision + permanent supervision	The technical supervision requirement is almost the same as in the previous period.	At least one permanent supervisor is obliged to be employed in underground production methods and mining enterprises employing at least 15 workers. Technical personnel may work as permanent supervisors (such as) in the license areas where the technical staff is to be employed.	Compulsory employment of technical staff/permanent supervisor on areas where a permanent supervisor will be employed + compulsory employment of technical staff	Permanent supervisor + obligation to be constantly present in terms of technical staff, in terms of a technical supervisor, at least every 15 days, the obligation to supervise the working places of the operation.	The number and conditions of the license to be received by the technical supervisor were the same as in the previous period.
Period of Law No. 6592 (2015-?)	Permanent supervision	Requirement to have worked at least 5 years in underground coal operation and 3 years in non-coal operations. Apart from the mining engineering diploma; Obligation for permanent supervisor training certificate from institutions authorized by MAPEG or MAPEG	Requirement to have a permanent supervisor in every mining operation, without the condition of workers employed and the method of mining (open-pit/underground).	Existing	Requirement to be present at work	Apart from the underground operation, a permanent supervisor may be appointed to a max. of 3 licenses belonging to the same license holder, with a max. of 20 km. of bird flight between the operating permit areas. In open-pit mining, a permanent supervisor may be appointed if there is continuity within the adjacent licenses of the same license holder.

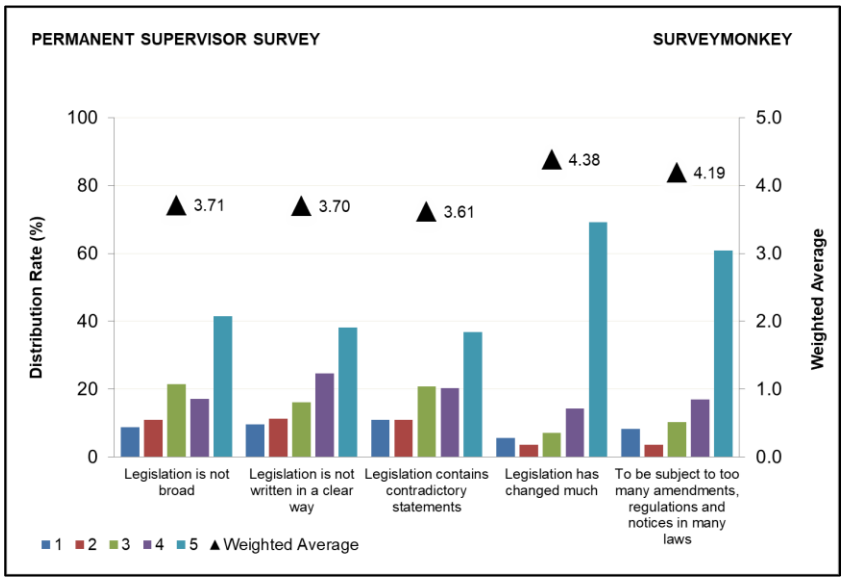
Reference: Yıldız, T.D. (2018). Personal meeting with Research Assistant Taşkın Deniz Yıldız (January 03, 2018); Maral, 2019, p. 34.

As seen in the table, from the Land Law to date, there is the matter that whether there is a "supersivision system", "appointment of a supervisor condition", "at least one supervisor per worker in a mining operation condition" or not, and that there have been changes in different topics such as ''obligation to be constantly at work'', "number of mining licenses areas that can be taken under the responsibility

of supervision" and different practices were introduced (Yıldız, 2018; Maral, 2019, p. 36).

Legislative changes in the development of supervision show that it can be beneficial to evaluate the legislation not only by lawmakers but also by the eyes of supervisors who are responsible and supervised by mining operations. Accordingly, the permanent supervisors were asked the questionnaire in 2019, *"Do you see a problem related to mining legislation and related legislation on supervision? If so, what are they (You can choose multiple answers and rate them)? "* 213 permanent supervisors answered this question (Figure 1).

Figure 1: Evaluation of mining legislation on supervision.



As seen in the figure, (181-194 answers in total) permanent supervisors scored approximately 5 in each of the 5 legislative problems identified. According to this scoring, supervisors mostly (4.38) complain about "the legislation is amended frequently". After this category, their scoring in order of weight is as follows:

• To be subject to too many amendments, regulations, and notices in many laws (4.19),

• Legislation is not broad (3.71),

• Legislation is not written in a clear way (3.70),

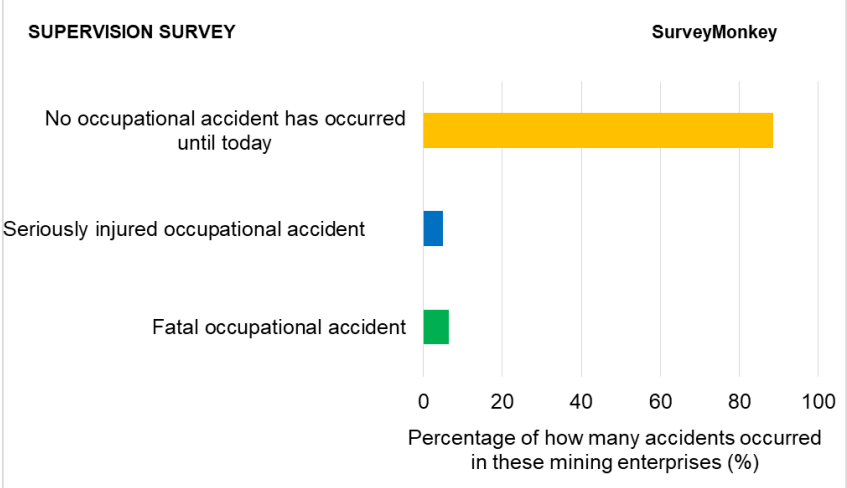
• The legislation contains contradictory statements (3.61).

Indeed, it has been stated in the above headings that there is a problem in each of these. In this table, the solution of the problem falls to the legislators.

Law No. 6592 came into force in 2015 immediately after the Soma Mining Disaster that took place in 2014 and 302 people died. Therefore, especially after this law, it should be examined whether there are fatal or injured work accidents in mining operations.

At this point, it is a topic for wondering whether the supervisors who answered the supervision surveys have gone through any fatal or severe injury from work accidents. The supervisors were asked the questionnaire, *"Has there been a fatal or severe injury from work accident at your mining operation since 2015?"*. The answer distribution of 62 supervisors to this question can be seen below (Yıldız & Maral, 2018; Maral, 2019, p. 36-37). (Figure 2).

Figure 2: Mining operations with fatal or serious injury work accidents



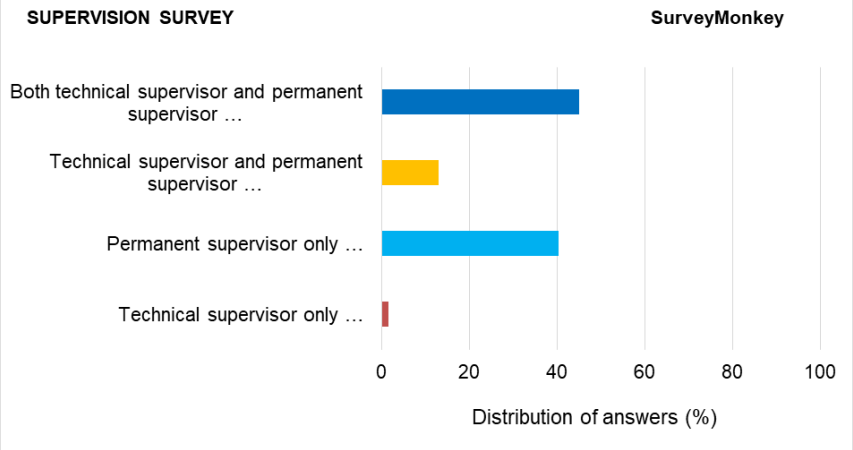
Reference: Yıldız & Maral, 2018; Maral, 2019, p. 69.

As it is seen in the mining operations where permanent supervisors work, there have not been fatal or seriously injured occupational accidents at the rate of 87% since 2015- the amendment of Law No. 6592. However, 6.4% had a fatal work accident and 4.8% had a serious injury accident. These numbers bring out the question that whether the measures and supervisions to be taken are adequately done (Yıldız & Maral, 2018; Maral, 2019, p. 69).

Another issue that is wondered about these legislative problems and mining accidents is how the "supervision system" should be for the supervisors personally present in the mining field. It was mentioned above that the practice of technical supervision was abolished in 2015. As a result of this radical change, the question as to whether the system envisaged by the legislation is suitable for implementation comes to mind. Accordingly, the questionnaire was asked to the permanent supervisors, *"Which of the supervision practices practiced until today is the right*

practice?". 62 supervisors answered this question. This distribution of answers is shown below (Figure 3) (Yıldız & Maral, 2018; Maral, 2019, p. 36-37).

Figure 3: Supervision Practices

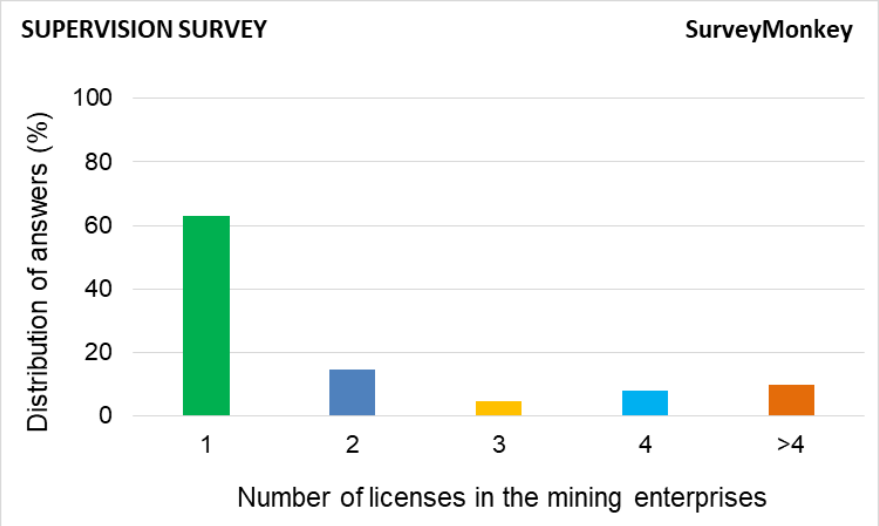


Reference: Yıldız & Maral, 2018; Maral, 2019, p. 37.

As seen in the figure, 45.2% of the permanent supervisors who answer the question want *"Implementation of both the technical supervisor and the permanent supervisor system" (as an at least one mining engineer who is permanently present in the production activities and also as a technical supervisor),* 40.3% and, on the other hand, require the implementation of the *"only permanent supervision system" (by necessity to have a permanent supervisor in production activities).* Also at lower rates, 12.9% of the supervisors propose the system of "*technical supervisor and permanent supervisor over a certain number of employees (that is, at least one supervisor in production permanently above a certain number and also technical supervisor who supervises periodically).* Those who think that the "*technical supervision system (which is considered to be sufficient in the production activities, and that the technical staff is considered sufficient)"* is only 1.6% of the supervisors (Yıldız & Maral, 2018; Maral, 2019, p. 37).

2.6.1 criticisms brought by the author under the sub-heading, bring out the question, ''approximately how many licenses in the field of mining enterprises in is Turkey?'' Accordingly, to the supervisors; *"How many operating license areas are there in your mining enterprise?"* was asked. The distribution of the answers of 62 supervisors can be seen below (Figure 4).

Figure 4: Distribution of the number of operating licenses at mining enterprises.



The results show that more than 1/3 of the mining enterprises where the supervisors work consists of more than one license. Since the appointment of a permanent supervisor to each mining license area will force mine license holders economically, this approximate license distribution shows that it is appropriate and mandatory to impose restrictions by setting a distance rule between the licenses, and the implementation should take place accordingly.

CONCLUSION AND RECOMMENDATIONS

Today, it is mandatory to have at least three technical staff in a mining operation. These are occupational safety specialist, engineer with technical training related to production, and permanent supervisor who assumes supervision. There have been changes in the conditions that were determined based on the development of legislation, supervisory system and operation in Turkey.

These changes are mostly caused by the necessity of ensuring OHS in mining operations and planning according to the number of mining engineers and mining operations. These conditions change over the years. However, despite all, there is the possibility of realizing medium and long term plans in the number of supervisors and the system to be implemented. At this point, “supervision systems”, which are thought to be more appropriate to be seen through the eyes of the supervisors, can be considered.

Especially in underground mining operations, OHS risks are higher compared to open-pit. This situation brings with it the necessity to have permanent

supervisors, rather than the size of the operation or the number of employees, since production is carried out underground.

As asked in the survey, through the eyes of the supervisors; there are legislative problems related to supervision such as "changing the legislation too often", "too many amendments in too many law, being subject to legislation and notice", "the legislation being not broad", the legislation not being written in a clear language'', and ''the legislation containing contradictory statements''. The fact that permanent supervisors respond to these problems with a high score indicates that these problems are at a high level. Especially the fact that the doctrine states that there are problems for the different legislative periods and even in the new period in the supervision system confirms these views of the supervisors. Above all, the fact that severe mine accidents have been happening even after Law No. 6592 came into force after the Soma mining disaster indicates that there are still unresolved problems in the permanent supervision system.

As explained in the study, permanent supervisors have a great responsibility in carrying out activities in accordance with OHS in mining operations. However, at this point, greater responsibility falls on the lawmakers and the Ministry of Family-Labour-Social Services, and MAPEG, which performs supervision in the mines and acts as law Implementation.

REFERENCES

Altunbay, M. (2002). Mining in the Ottoman Empire in the classical period. *New Turkey Publications*, volume 10 (Turks), 792-801.

Atılgan, H. (2019). Why aren't we successful to prevent working accidents? *International Symposium On Occupational Health And Safety In Mining'2019,* 03-04 October, Adana/Turkey, pp.29-37.

Baycık, G. (2006). Mining workers in terms of labor and social security law. Yetkin publications, Ankara, 238 p.

Boran, O. (2001). Scientific supervision in the private sector: Current status and new approaches. *Mining Engineering Education Symposium 2001,* MMO, Istanbul, pp.181-187.

Çatma, E. (2011). Duties of mining engineers in hard coal production in the Ottoman Empire. *International Symposium on Occupational Health and Safety in Mine Works'2011,* (24-25 November 2011), Zonguldak, pp.181-192.

Dessureault, S. & Kahraman, M. M. (2010). Security and cultural change in mines. *Journal of Mining Turkey,* 8, 48-49.

Eskikaya, Ş. (2015). Solutions to minimize mining accident. *International Symposium on Occupational Health and Safety in Mine Works'2015*, (21-22 December 2015), pp.39-42, Adana.

Fındıkgil, Y. (1966). Mining law. Istanbul Technical University, Department of Mining Engineering.

Gülan, A. (2008). Main principles and basic works of mining administrative law - a critical approach by utilizing legislative and judicial decisions. Istanbul.

Güray, B. & Abut, M. (2015). Labor rights and labor safety pursuant to recent amendments in mining legislation. *Mining Law Proceedings Book*, (3-4 October 2015), Afyon, pp.149-173.

Güyagüler, T. (2002). Examination of proposals and measures of methane gas explosions in Turkey. *Turkey 13th Coal Congress Proceedings* (29-31 May 2002), Zonguldak, pp.45-51.

http://www.resmigazete.gov.tr/main.aspx?home=http://www.resmigazete.gov.tr/arsiv/8487.pdf&main=http://www.resmigazete.gov.tr/arsiv/8487.pdf, Accessed: March 15, 2020.

Kahraman, M. M. (2017). Need for corporate occupational safety policy. *Journal of Mining Turkey*, 67, 118-119.

Kayadelen, M. (2015). Mining law has changed again. When is the next change? http://kayadelen.gen.tr/index.php?option=com_content&view=article&id=50:madenyasasyinedegiti&catid=6:madencilik&Itemid=11>, Accessed: April 02, 2019.

Kayınova, A. (2019). Life changing in a letter! An ironic view of the powder problem: Struggle or fighting? *International Symposium On Occupational Health And Safety In Mining'2019,* (03-04 October 2019), Adana, pp.639-650.

Keskin Ö. (2007). Effects of employment and the Ottoman Empire to the Ottoman foreign mining engineer. *Turkey Near-Term Researchs*, 11, 79-92.

Keskin, Ö. (2011). The development of mining law in the Ottoman Empire (1861-1906). *Journal of Ankara University Ottoman History Research and Application Center*, 29, 125-148.

Köse, H. M. (1992). Opinions for alternative mining policies. Şafak Printing, 1st edition, 172 p., Ankara.

Kula, M. (2015). The place of aggregate business in Turkish legal system. *Mining Law Proceedings Book*, (3-4 October 2015), Afyon, pp.257-281.

Maral, M. (2019). *Duties, authorities and responsibilities of the permanent supervisor & Evaluation of mine operations by supervisors.* Istanbul Technical University Institute of Science, master's thesis, 122 p.

MMO, (1995). The ministry of labor must take action to start the regulation amendment study ... *Letter from the MMO dated August 14, 1995.* Available via: http://www.maden.org.tr/resimler/ekler/a99f6821980ac99_ek.pdf

Ökten, G. & Fişne, A. (2018). Occupational health and safety in mines, lecture notes. *Istanbul Technical University, Department of Mining Engineering,* 400 slide.

Quataert, D. (2009). Miners and the State in the Ottoman Empire: The Zonguldak Coalfield 1822-1920 (Translators to Turkish: Nilay Özok Gündoğan, Azat Zana Gündoğan) Boğaziçi University Publishing House, First Edition, Istanbul, 414 p.

Sert, M. & Şahverdioğlu, İ. (2015). Investigation of the positive and negative effects of the changes in mining law on the sector. *Mining Law Proceedings Book,* (3-4 October 2015), Astana Publications, Afyon, pp.175-203.

Tızlak, F. (1997). Mining in Keban-Ergani Region in the Ottoman Period (1775-1850). Turkish Historical Society Publications, VII. Sequence, 216 p. Ankara.

TMD, (2019). Authority visits from sector representatives. *TMD,* 77, 56-61.

TMD, (2020). Current and general problems of the mining sector in the Ministry of Energy and Natural Resources. (Energy and Natural Resources by the Miners Association of Turkey submitted to the Ministry of Mining Industry and Solution Proposals summary of the report). *TMD Sector News Bulletin,* 79, 22-26.

Topaloğlu, M. (2003). Mines and quarries law. Karahan Bookstore, Ankara.

Topaloğlu, M. (2011). Mining law amended by Law No. 5995, and related legislation. 1st edition, Adana, 857 p.

Tufan, T. (2015). Expectations of legal ımprovement in mining applications. *24th International Mining Congress and Exhibition.* (14-17 April 2015), Antalya, pp.11-16.

Tuğ, O. Ç. (2014). Soma Disaster, work accidents and mining. *Journal of Mining Turkey,* 40, 62-64.

Tuncay, H. S. (2019). Studies of the General Directorate of Occupational Health and Safety in the mining sector, *Journal of Mining Turkey,* 76, 106-100.

Turkey Bar Association, (2015). Soma Mining Disaster - Report on the System and Basic Legislative Recommendations for the Prevention of Similar Accidents. *Turkey Bar Association Publication No. 288,* 1st edition, Ankara, 136 p.

Yeşilyurt, C. (2011). The Act of Law No 5995 VII (Article 31 of the Mining Law No. 3213*). Journal of Mining Turkey,* 15, 80-82.

Yeşilyurt, C. (2015). Occupational accidents and mine legislation. Journal of Mining Turkey, 44, 112-114.

Yıldız, N., Tombul, M., Sever, M. & Şahin, M. (2003). Scientific Supervision and Occupational Safety Engineering Training Seminar (29-30 April 2003). *Ministry of Labor and Social Security & Near and Middle East Labor Training Center & MMO,* Ankara, pp.266-290.

Yıldız, N. (2015a). Legal Regulations in Mining in 1954 to 2015, Korza Publishing Inc., Ankara, 186 p.

Yıldız, N. (2015b). The bill is enacted, the golden goose was cut! (?) *Journal of Mining Turkey,* 45, 64-80.

Yıldız, N. (2017a). Permanent supervisor practice. *Journal of Mining Turkey,* 63, 98-100.

Yıldız, N. (2017b). Mining engineer on September 21, 2017 Mining Regulation. *Mining Bulletin,* pp.58-67.

Yıldız, T. D. (2012). *Analysis of changes being done of the mine legislation of Turkey before and after the Mining Law No 3212.* Istanbul Technical University, Institute of Science, master's thesis. 321+XXII p.

Yıldız, T. D. (2017). Evaluation of legislation provisions on ventilation in Turkey in terms of occupational health and safety. *25th International Mining Congress and Exhibition,* (11-14 April 2017), Antalya, pp.270-282.

Yıldız, T. D. (2018). Personal meeting with Research Assistant Taşkın Deniz Yıldız (January 03, 2018).

Yıldız, T. D. & Haner, B. (2017). Evaluation of Turkish legislation provisions on air quantity to be submitted to underground minerals and ventilation ways, *International Symposium on Occupational Health and Safety in Mine Works'2017,* (02 – 03 November 2017), Adana, pp.47-65.

Yıldız T. D. & Maral M. (2018). "Supervisory Survey" conducted on 62 permanent supervisors in the SurveyMonkey program.

Yüksel, H. (1997). Keban - Ergani Mines in the Ottoman Period. Sivas, 138.

Yüksel, A. (2010). Technical supervision, technical supervisor and occupational safety. From the Technical Supervisor Training Seminar Notes. *MMO Publication No:170,* Ankara, pp.271-284.

Zaman, E. M. (2012). Zonguldak & Human & Space & Time. *MMO,* Zonguldak, 522 p.

Zaman, E. M. (2013). Children of coal. *Karina Publication,* 1st edition, Ankara, 314 p.