

# TURKISH MEDICAL ASSOCIATION REPORT ON THE ASSESSMENT OF HEALTH PROBLEMS IN PERSONS EXPOSED TO CHEMICAL RIOT CONTROL AGENTS



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# **REPORT ON THE ASSESSMENT OF HEALTH PROBLEMS IN PERSONS EXPOSED TO CHEMICAL RIOT CONTROL AGENTS**



Report On The Assessment Of Health  
Problems In Persons Exposed To  
Chemical Riot Control Agents

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## INTRODUCTION

In June 2013 people from all parts of Turkey were out in streets demonstrating for their rights, the environment, democracy and their future. Unfortunately these peaceful demonstrations met with intensive violence and use of chemical agents by the police.

The Turkish Medical Association is engaged in studies on the effects on human health of chemical agents used in social events. The fact is that Gezi Park events contributed to the accumulation of rather extensive information on health problems faced by many people affected by gases used.

The Turkish Medical Association exposed these health problems through a web based study related to Gezi Park demonstrations. The present study contributes to worldwide information and knowledge on the issue in many respects and also provides concrete evidence supporting the banning of such chemical agents.

We are indebted to the scientific community helping in this study which we hope to be a contribution to public health.

We are indebted to Dr. Feride Aksu Tanık, Dr. Cavit Işık Yavuz, Dr. Harun Balcıoğlu and Uğur Okman who have conducted and reported this study on behalf of Turkish Medical Association. We hope that this report will make a contribution to public health.

**Central Council of  
Turkish Medical Association**



## SUMMARY

In Turkey, the use of chemical substances known as “tear gas” or “riot control agents” by security forces is becoming more and more common in gatherings and demonstrations and this issue has recently made a top in the agenda upon recent events. These chemicals in gas and liquid forms used intensively and for days have created and are continuing to create serious health problems.

According to information gathered by the TTB (Turkish Medical Association), as a result of events taking place from May 31st to June 25th 4 persons lost their lives and about 8,000 persons injured, 60 of them being serious cases. 11 persons lost one of their eyes and 103 persons suffered head injury. Injuries and need for healthcare are diverse depending on the type of gas used. These include the following: skin burns and breathing problems, asthma and epilepsy attacks caused by tear gas; muscular-skeleton system injuries (soft tissue injuries, cuts, burns, open/closed fractures from simple cases to serious ones followed by sequel) caused by gas capsules shot at short distances, plastic bullets and clubs; head injury, eye problems leading to eye loses and intra-abdominal organ injuries. While some of these findings are results of rubber bullets and physical blows, it is still true that majority were caused by gas capsules shot at close distances. Security forces tend to diversify the type of chemical substances they use while the severity and health effects of their interventions also increase.

Apart from those applying to hospitals and other health facilities for serious health problems and injuries, it is common knowledge that a much larger group was affected by chemical gasses used against demonstrators.

Starting from the very outset of the process, the Turkish Medical Association has been active in fulfilling its professional and humanitarian responsibilities by extending first aid and other health services through its Chambers of Medicine, conducting reporting, monitoring

and evaluation work, issuing press releases and producing and sharing information related to riot control agents and its effects. In addition to these, a survey was launched to assess health problems faced by those exposed to chemical gasses and the first report related to this survey was shared with the public on 10 June 2013.

Data entry related to persons affected by gasses is presently in progress and this first report presents an assessment made on the basis of 11,155 responses. According to findings and completed web-based questionnaire **Form for Evaluating Exposure to Chemical Gases/Riot Control Agents:**

- Large majority of affected people (65%) are from the age group 20-29. It is followed by the age group 30-39 (23%).
- More than half (53%) of affected people are women.
- Affected people are from 41 different provinces. 94.8% of all affected people are from three largest cities of the country and Istanbul is at the top of the list with 64.5%.
- 68.5% of respondents were “very heavily” affected by gasses. Accordingly, almost 7 out of 10 were intensively affected by chemical substances used against demonstrators.
- While the rate of use of protective equipment is as high as 88%, it appears that this equipment did not provide sufficient protection from chemical gasses.
- According to responses, 30% of demonstrators were exposed to gasses at a distance less than 1 meter while the distance is 1 to 5 meters for 38%. In other words, 68% of respondents had their exposure to gases within a distance of 5 meters. Additionally, 33% of respondents say their exposure was longer than five minutes **within their closest distance to gases**. This suggests that exposure was intensive and amount of chemicals entering body was high, which may be the cause of serious health effects.
- 53% of persons affected say they were exposed to chemicals from 1 to 8 hours at different times. 11% were exposed for a period of 20 to 24 hours. These suggest that respondents were exposed to gasses for long hours in total at different times and

*with different periods. This may be considered as a factor intensifying associated health effects.*

- *As to symptoms emerging after exposure, those related to eyes, nose, throat and respiratory tract come to the fore. The total number of symptoms arising at different times amounts to 147,248. Over 46,000 of these symptoms lasted longer than 1 hour.*
- *Among symptoms, asthma and hypertension attacks, difficulty in breathing, neurological, and psychological symptoms are at considerable level.*
- *Longer periods of exposure triggers many symptoms and cause them to remain longer.*
- *Among respondents, injuries by gas capsules are by 7%. Parts of body that these persons were hit suggest that gases were fired by directly targeting people.*
- *Scratches and rushes are the lead indicators of the severity of injuries. In total, 191 open wounds and 31 cases of fracture were reported.*
- *92% of affected people had either no medical aid or received it from volunteers around. The proportion of hospital application or referred to hospital is by 5%.*

These data show that chemical substances used in demonstrations caused serious health problems in people affected. It is a breach of human rights that these substances referred to as “chemical weapons” in medical literature, whose damage to human beings and the environments are exposed in many studies and serious concerns exist as to their long-term effects were used so intensively and arbitrarily and with the intention to harm. The use of tear gas and other similar riot control agents must be immediately prohibited. A programme must be launched to monitor resulting health problems and their long-term effects.



## I. INTRODUCTION

Substances referred to as “riot control agents” that are used more and more by security forces in social events are now in the agenda of the country as a result of recent protests. These agents containing chemical substances of different properties were introduced starting from the 1990s in their different forms (i.e. sprays, aerosols and liquids used through bomb like devices including tear gas and irritants).

“Riot control agents” commonly known as “gas bomb” or “tear gas” has over 15 varieties. Among them, most commonly used ones include chlorobenzylidene malononitrile (CS), dibenzoxazepine (CR), chloroacetophenone (CN), chlorodihydrophenarsazine (DM) and oleoresin capsicum (OC). CS, CN and OC are the three forms commonly used in America and Europe.



Health effects of these chemical substances extend over a wide range. They have their effects on various systems including eyes, skin and respiratory and circulatory systems. It is also known that they may

trigger fatal processes of ill health. Though there is yet no sufficient information about their longer-term health effects, it is known that intensive and prolonged exposure increases the risk of toxicity and may lead to death.

There may be many factors triggering the manifestation of health effects. These factors include the following: Type and chemical properties of riot control agents used; duration of exposure; distance to the agent when it is released; age, sex and other characteristics of persons exposed to; state of health etc.

In general, these chemical substances start showing their effects very shortly after their use (3-5 seconds) and their effects on the body gradually diminish and disappear within the first 15 to 60 minutes. Since they are absorbed through skin and accumulate in nerve ends, it may sometimes take hours to have their effects disappear totally. In adults, there may be delayed reactions as well in case of extraordinarily high dose exposure.

Even though it is claimed that harmful effects are only temporary and do not take long to last, there are still many questions concerning such claims and actual health effects due to the clinical picture and complications caused by these chemical substances.



Riot control agents were used earlier in Turkey at different times and in different settlements to control social protests. Yet, their use starting from 31 May 2013 in Istanbul during the extremely violent and thus unacceptable intervention by the police to a legitimate and peaceful demonstration and then recurring of such interventions in many other places in Turkey presented a different case: the dimensions that the use of chemical agents assumed during recent protests are of great concern in terms of its effects on human health. As can be seen in many photos and video records available in the media, the police shoot gas capsules by directly targeting demonstrators and use gasses even indoors both of which leading to serious health problems and injuries.

Excessive, irresponsible and felonious use of chemicals has led to health problems, injuries, organ losses and death in the short term. Uncertainty about their longer-term effects and possibilities in this regard are all sources of deep concern. The intensive and random use of various types of chemicals in a way to pervade homes, workplaces, temporary first aid units, subway stations and even hospitals suggests that the problem is not confined only to demonstration areas.

According to information collected by the TTB, four persons died (Mehmet Ayvalıtaş, Abdullah Cömert, Mustafa Sarı, Ethem Sarısülük), and 8,000 persons were injured during demonstrations taking place from May 31 to June 24 2013. 11 persons lost their eyes. Types of injuries and need for medical care include skin burns and breathing problems, asthma and epilepsy attacks caused by tear gas; muscular-skeleton system injuries (soft tissue injuries, cuts, burns, open/closed fractures from simple cases to serious ones followed by sequel) caused by gas capsules shot at short distances, plastic bullets and clubs; head injury, eye problems leading to eye loses and intra-abdominal organ injuries. Plastic bullets and gas capsules fired by targeting human bodies directly as well as by physical violence used by the police caused many injuries. In the course of events, security forces started to use different chemicals and the severity of interventions as well as their health effects tended to increase.

It is observed that a very large group of people other than those applying to health facilities for serious health problems and injuries were also affected by chemical gasses used.

Starting from the beginning of demonstrations, the Turkish Medical Association has been trying to fulfil its professional and humanitarian responsibilities by extending first aid and other medical services; reporting, monitoring and evaluation activities, press releases and producing and sharing information on riot control agents through its chambers of medicine. In addition to these, a survey was launched to assess health problems faced by those exposed to chemicals whose initial findings are presented in this report.



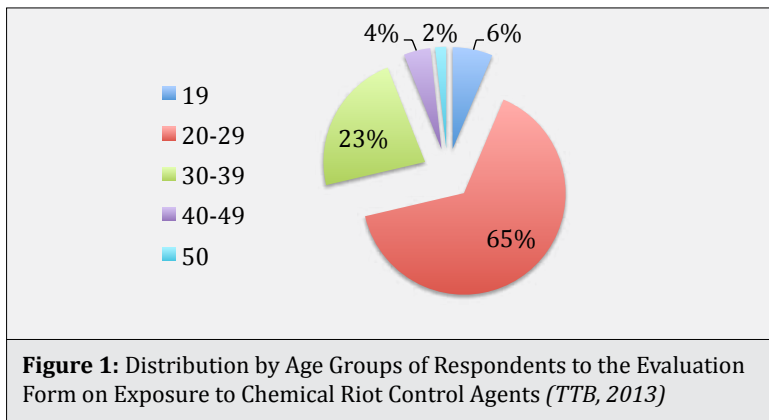
## II. FINDINGS

In a very short period after its design and dissemination through the TTB website, the *Evaluation Form on Exposure to Chemical Weapons/Riot Control Agents* received many responses. An evaluation covering first 7,000 respondents was shared with the public on 10 June 2013.

In the present report, data is derived from 11,155 responses. Responses to various questions in the form are outlined in tables and figures to follow. The number of responses varies from question to question. Data presented in this report was evaluated after excluding “no response” for each question. Evaluations under some headings are based on total period of exposure over different days.

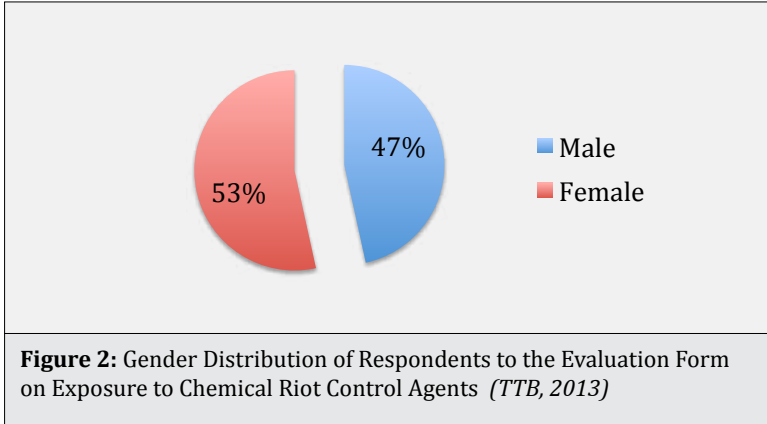
### II.1. Age

Examining the age status of 9,395 respondents to the survey questionnaire, we find that a large majority (65%) is from the age group 20-29. It is followed by the age group 30-39 (23%).



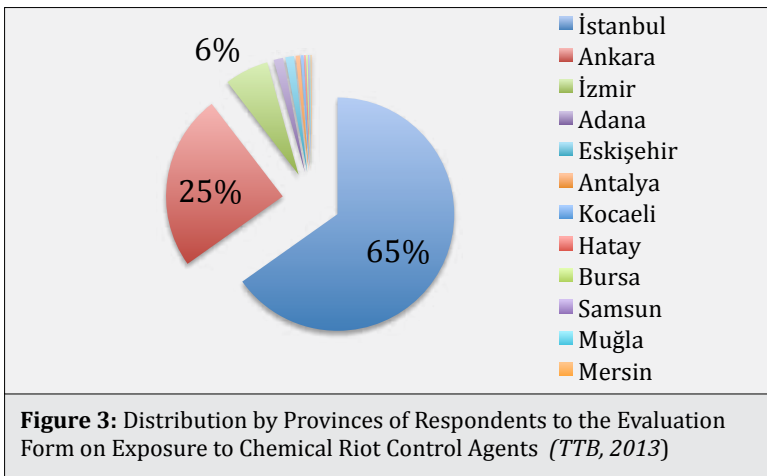
## II. 2. Sex

Over a half (53%) of respondents are female.



## II. 3. Distribution by Provinces

Responses to the survey questionnaire were from 41 different provinces. In this specific data group, İstanbul has its weight by 64.5%. 94.8% of respondents are from three biggest cities.



**Table 1:** Distribution by Provinces of Respondents to the Evaluation Form on Exposure to Chemical Riot Control Agents

Provinces	Number	%
İstanbul	5,717	64.5
Ankara	2,139	24.1
İzmir	5,49	6.2
Adana	115	1.3
Eskişehir	105	1.2
Antalya	51	0.6
Kocaeli	34	0.4
Hatay	19	0.2
Bursa	18	0.2
Samsun	14	0.2
Muğla	12	0.1
Mersin	11	0.1
Diğer*	76	0.9
Toplam	8,860	100,0

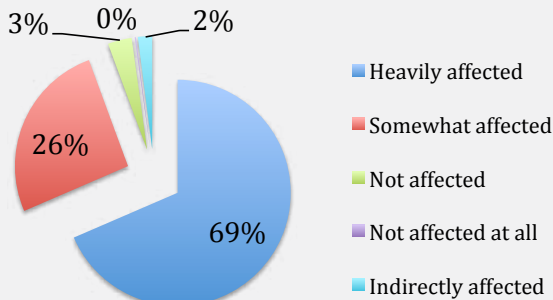
\* Afyon, Ağrı, Aksaray, Aydın, Balıkesir, Batman, Burdur, Çanakkale, Denizli, Diyarbakır, Edirne, Elazığ, Erzincan, Hakkari, Isparta, Kayseri, Kırıkkale, Kırklareli, Konya, Kütahya, Manisa, Nevşehir, Ordu, Sakarya, Samsun, Siirt, Şırnak, Tekirdağ, Yalova, Zonguldak.

## II. 4. Level of Effect

Of 9,978 responses given to the survey question “Were you affected by gasses”, 68.5% was “Yes, I was heavily affected”. Out of each 10 respondents, almost seven express that they were seriously affected.

**Table 2:** Level of Adverse Effect on Respondents to the Evaluation Form on Exposure to Chemical Riot Control Agents

Level of Effect	Number	%
Heavily affected	6,836	68.5
Somewhat affected	2,581	25.9
Not affected	342	3.4
Not affected at all	16	0.2
Indirectly affected	203	2.0
<i>Total</i>	<i>9,978</i>	<i>100.0</i>

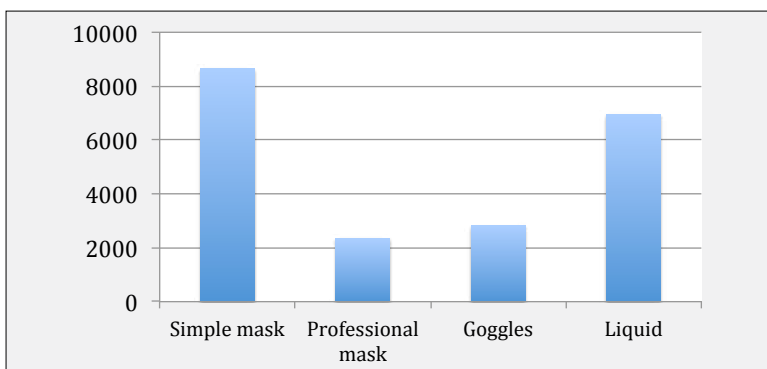


**Figure 4:** Level of Adverse Effect on Respondents to the Evaluation Form on Exposure to Chemical Riot Control Agents (*TTB, 2013*)

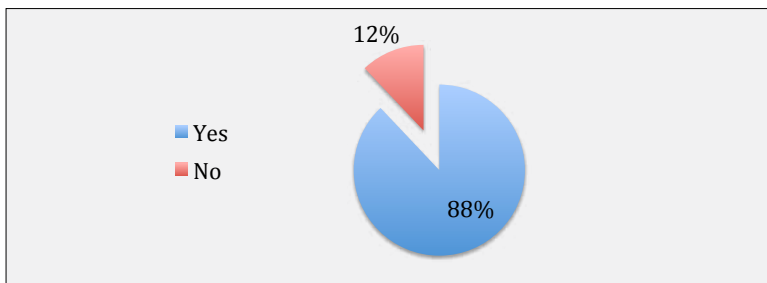


## II.5. Protection

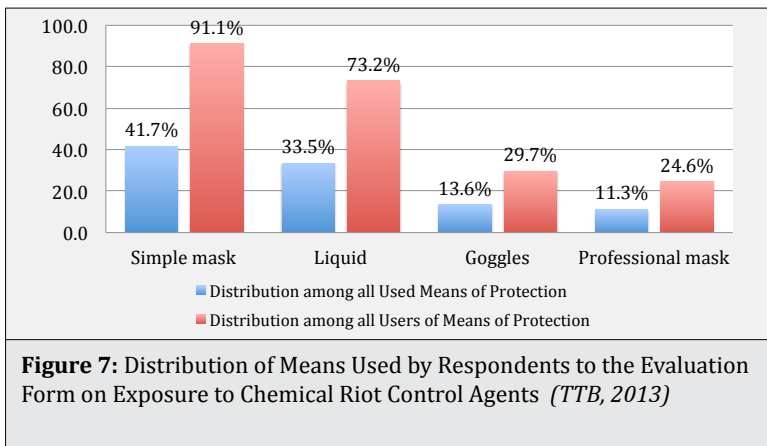
88% of respondents used some equipment to protect from gases and 12% did not. 42% of respondents were with simple masks while 33% used liquids that eliminate and neutralize the effects of chemical substances. Users of special glasses and professional masks were 14% and 11%, respectively. These data indicates how unprepared and inexperienced were people who were exposed to chemical gasses. Figures below show the numerical distribution of the use of protective equipment, their use in repeating effects and the types of equipment used.



**Figure 5:** Use of Protective Equipment by Respondents to the Evaluation Form on Exposure to Chemical Riot Control Agents (*TTB, 2013*)



**Figure 6:** Use of Protective Equipment by Respondents to the Evaluation Form on Exposure to Chemical Riot Control Agents [Including repeated exposure] (*TTB, 2013*)



## II. 6. Distance

30% of respondents to this question state that they were exposed to chemical gas at a distance shorter than 1 meter. For 38% of respondents the distance is between 1 and 5 meters. Hence, 68% of respondents were exposed to gas at a distance of 5 meters.

**Table 3:** Closest Distance in Exposure to Chemical Gasses by Respondents to the Evaluation Form on Exposure to Chemical Riot Control Agents

Closest Distance in Exposure to Chemical Gasses	Number	%
Shorter than 1 meter	3,071	30.0
1-5 meters	3,843	37.6
Beyond 5 meters	3,306	32.4
Total	10,220	100.0

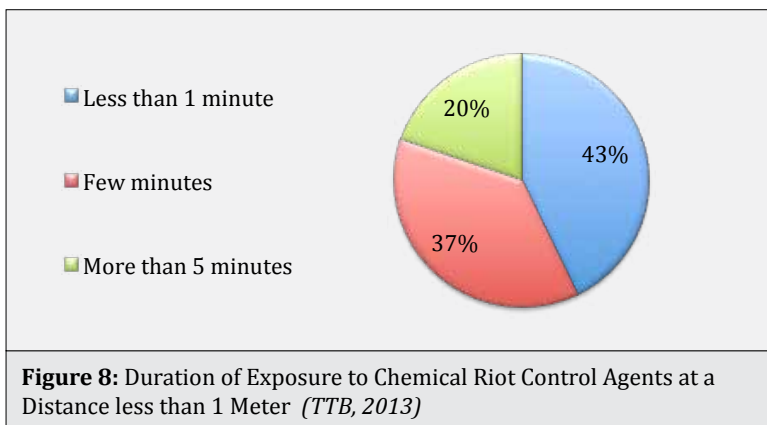
## II.7. Duration of Exposure

33% of respondents were exposed to gases for a period longer than 5 minutes at their closest distances to the source of gasses. For 38%, the duration of exposure was for few minutes. Considering this data together with other findings and high number of those who were exposed to gasses several times within a distance of 5 meters, it can be concluded demonstrators were heavily affected.

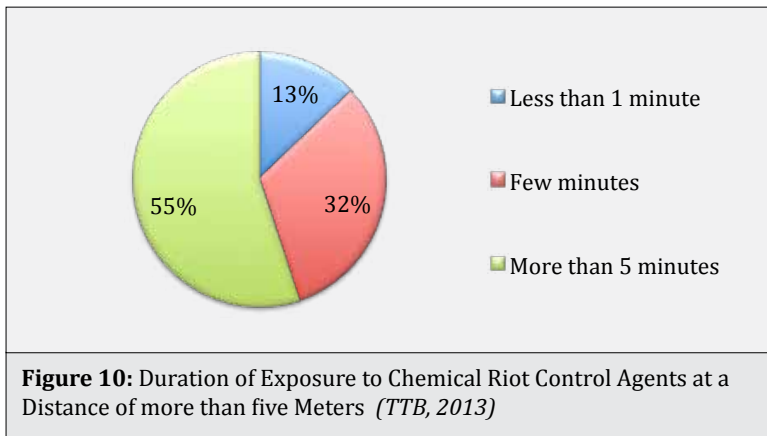
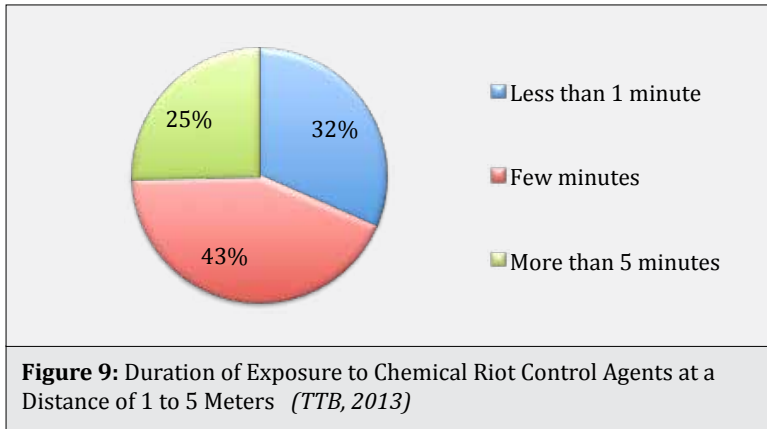
**Table 4:** Duration of Exposure to Chemical Riot Control Agents at Distances Closest to their Source

Duration	Number	%
Shorter than 1 minute	2,929	29.2
Few minutes	3,822	38.2
Longer than 5 minutes	3,262	32.6
<i>Total</i>	<i>10,013</i>	<i>100.0</i>

Evaluating the distance and duration of exposure together, it appears that 20% of respondents were exposed to gasses for longer than 5 minutes at distance shorter than 1 meter.



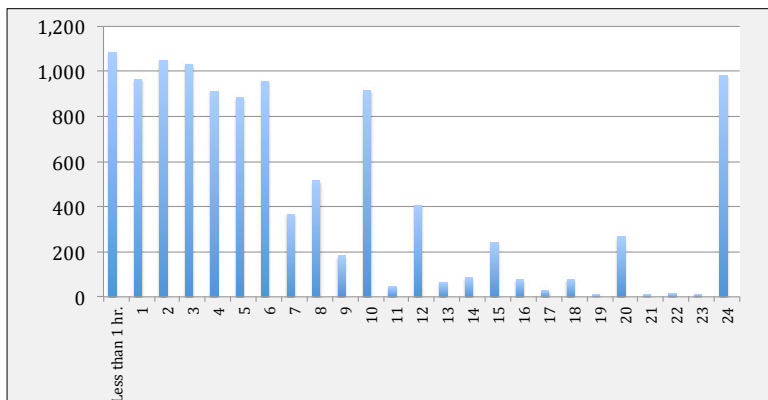
This period (exposure for longer than 5 minutes) increases to 25% when the distance is 1 to 5 meters. If the distance is longer than 5 meters, it is 55%.



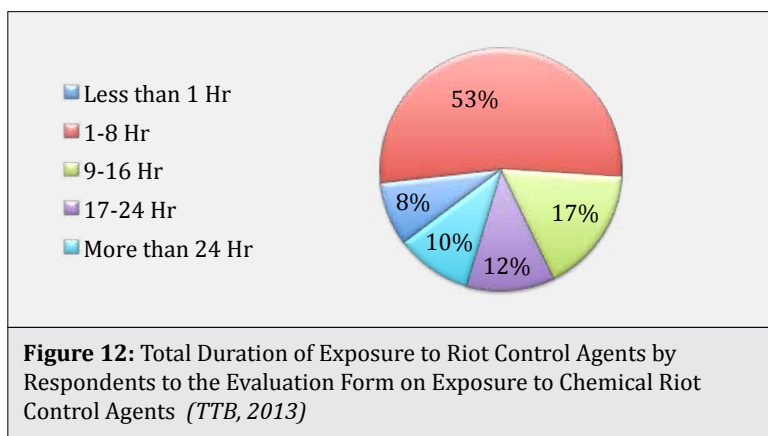
## II.8. Total Duration of Exposure

Responses to the question “total duration of exposure to tear gas” were assessed in terms of total days of exposure. There were 11,164 responses indicating different durations of exposure at different times

and only 10% of these responses state exposure shorter than an hour. 53% of respondents were exposed to gases from 1 to 8 hours in total at different times. 11% state that their exposure to gasses was for 20 to 24 hours. It then appears that respondents were exposed to gasses for hours in total adding up different lengths of exposure at different times. This may be considered as a factor aggravating the health effects of exposure.



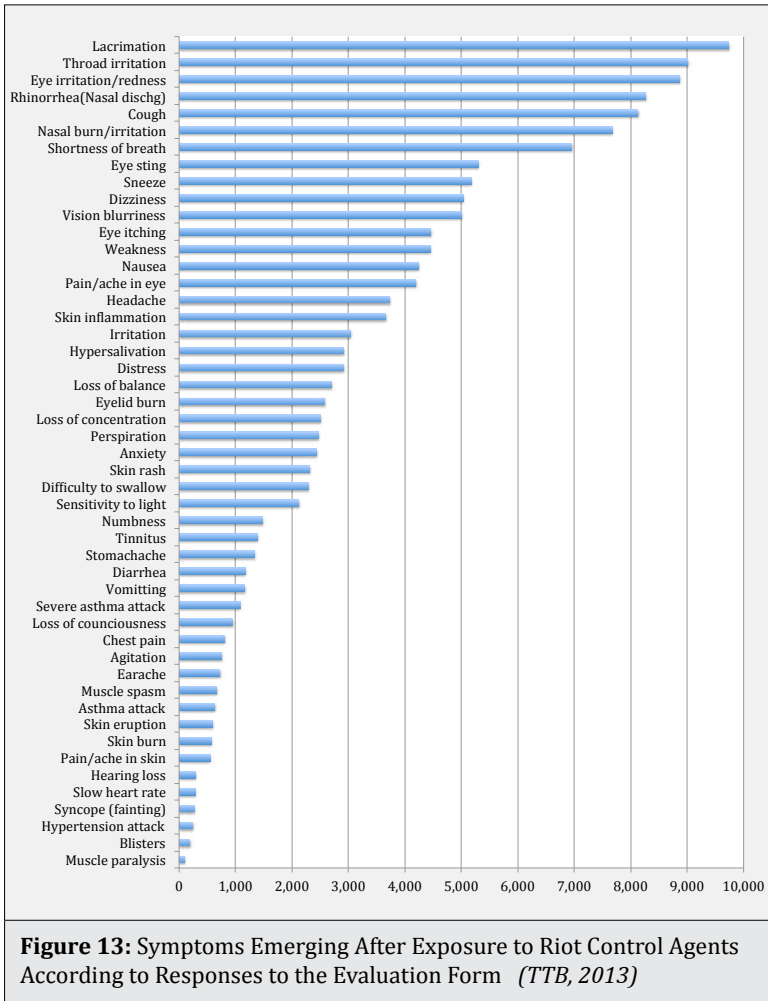
**Figure 11:** Total Duration of Exposure to Riot Control Agents by Respondents to the Evaluation Form on Exposure to Chemical Riot Control Agents (TTB, 2013)



**Figure 12:** Total Duration of Exposure to Riot Control Agents by Respondents to the Evaluation Form on Exposure to Chemical Riot Control Agents (TTB, 2013)

## II.9. Symptoms Emerging After Exposure to Tear Gasses

To the question on symptoms emerging after exposure to chemicals, responses mostly gather around those relating to eyes and nose, throat and respiratory tract. The total number of symptoms emerging at different times is 147,284.



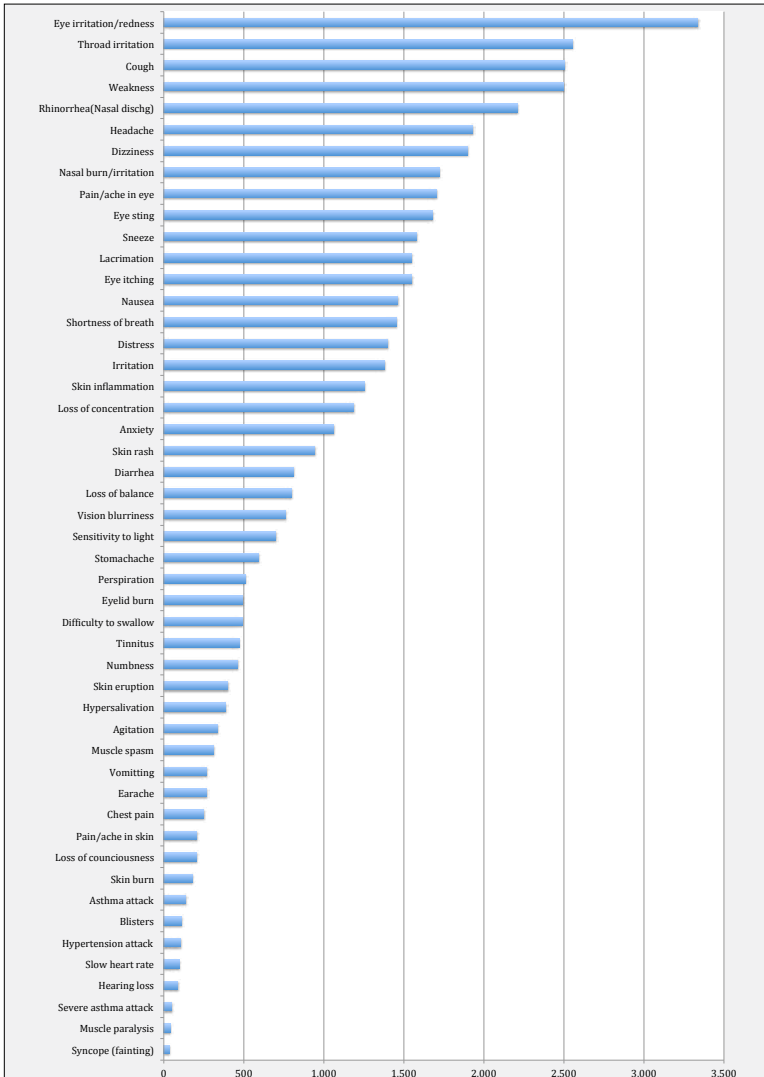
**Table 5:** Symptoms Emerging after Exposure to Tear Gases

Group of Symptoms	Number	%
Eye symptoms	42,235	28.7
Ear-nose-throat symptoms	34,793	23.6
Respiratory system symptoms	17,593	11.9
General symptoms	16,704	11.3
Psychological symptoms	10,881	7.4
Digestive system symptoms	10,817	7.3
Skin symptoms	7,857	5.3
Nervous system symptoms	5,875	4.0
Heart-circulatory system symptoms	529	0.4
<i>Total</i>	<i>147,284</i>	<i>100.0</i>

## II.10. Symptoms Lasting Longer than One Hour

As a result of gas exposure at different times, symptoms lasting longer than one hour are presented in the figure below. Respondents stated over 46,000 symptoms lasting longer than one hour. Clustering these symptoms by systems, the following outcomes are interesting in terms of total figures for symptoms.

**TURKISH MEDICAL ASSOCIATION  
REPORT ON THE ASSESSMENT OF HEALTH PROBLEMS IN PERSONS  
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**Figure 14: Symptoms Lasting Longer than One Hour after Exposure to Riot Control Agents According to Responses to the Evaluation Form (TTB, 2013)**

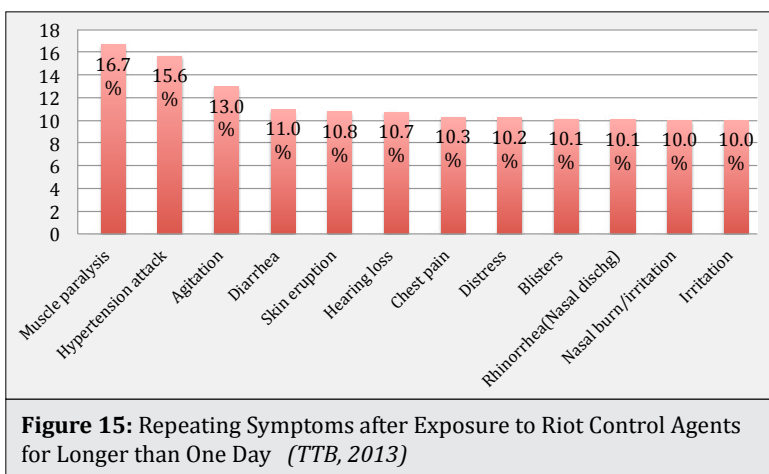


**Table 6:** Symptoms Lasting Longer than One Hour

Group of symptoms	Number	%
Eye symptoms	11,762	25.4
Ear-nose-throat symptoms	9,373	20.2
Respiratory system symptoms	7,227	15.6
General symptoms	5,027	10.8
Psychological symptoms	4,388	9.5
Digestive system symptoms	3,519	7.6
Skin symptoms	3,095	6.7
Nervous system symptoms	1,794	3.9
Heart-circulatory system symptoms	199	0.4
<i>Total</i>	<i>46,384</i>	<i>100,0</i>

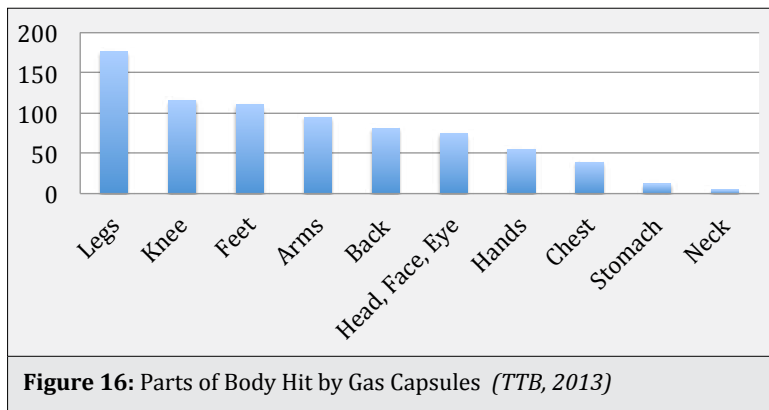
## II.11. Repeating Symptoms

The figure below shows symptoms repeating depending on duration of exposure. As duration of exposure gets longer, many symptoms are triggered and last longer.



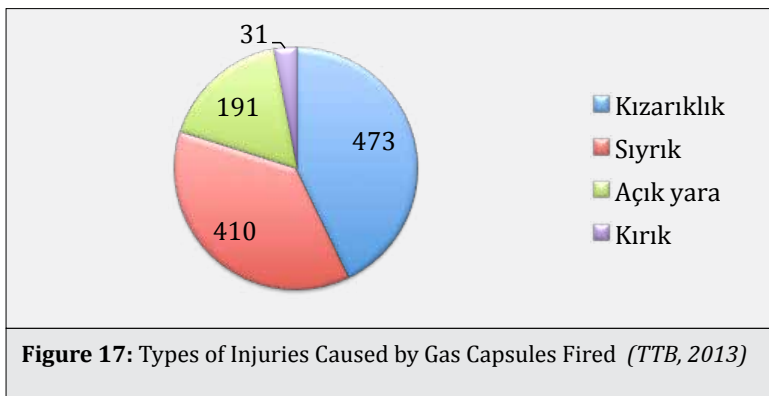
## II.12. Injury by Gas Capsules

Among respondents there are 788 injuries caused by gas capsules (7%). Parts of body injured are presented in the figure below. Data suggest that there was firing deliberately targeting people.



## II.13. Severity of Wounds

Among injuries reported, majority consist of scratches and rushes. Also reported are 191 open wounds and 31 fractures.



## II.14. Medical Care

According to responses, 92% did not receive any medical care or received from nearby volunteers. The rate of hospital application or referral is only 5%.



**Table 7: Medical Care**

Medical Care	Number	%
Received no care	5,236	49.39
Received from others/volunteer health workers	4,660	43.95
Applying/taken to hospital	515	4.86
Received from health workers in ambulances	187	1.76
Applying to pharmacist's	4	0.04
<i>Total</i>	<i>10,602</i>	<i>100,00</i>

## II.15. Ongoing Symptoms

As for symptoms that emerged after gas exposure and were ongoing when responding to the questionnaire, there are 4,315 such responses, which constitute 39% of total responses. This percentage increases to 42 when calculated over total exposure. Among symptoms that were continuing when the questionnaire was completed, notable ones include pustule-like skin eruptions, muscular weakness in hands and feet and balance problems while walking and moving.

**Table 8:** Symptoms in respondents that is still ongoing (when they were responding to the questionnaire)

Symptoms	Number	%	%*
Pustule-like skin eruption	1,575	33.2	14.1
Muscular weakness in hands and feet	1,247	26.3	11.2
Balance problems while walking and moving	1,156	24.4	10.4
Prickles in fingers and toes	389	8.2	3.5
Numbness in fingers and toes	374	7.9	3.4
<i>Total</i>	<i>4,741</i>	<i>100.0</i>	<i>42.5</i>

\* Percentage in total responses

### III. EVALUATION

1. Violent police intervention to legitimate and peaceful demonstrations on İstanbul Taksim Gezi Park and excessive use of riot control agents that are classified as chemical weapons against protesters in many parts of Turkey brought along many health problems, injuries and even deaths. Chemical substances used may end up with serious health effects.
2. According to the Ministry of Interior, about 25 million people from 79 provinces took part in demonstrations. Considering the nature of interventions to demonstrators and methods used against, it is possible that adverse health effects cover a much wider population than mentioned here. Hence, findings given in the present report are related to some of the people affected by gasses and other methods of intervention.
3. In general, examining 11,155 responses given to the *TTB Questionnaire on Exposure to Riot Control Agents* we find the following: Younger people and women have their special weight among respondents; some symptoms remain for long; symptoms that remain for longer than one hour include general symptoms and those related to eyes, nose, throat, ears as well as psychological symptoms. These are followed by other serious symptoms as hypertension attacks and difficult breathing. Exposure to gasses has led to too many symptoms, which add up to 147,000. Moreover, a significant part of these symptoms lasted for longer than an hour. It is also understood that some health problems were still there when this form was completed.
4. The proportion of respondents reporting to be wounded by gas capsules is 7%. Wounds are mostly on legs, arms and knees, but there are also people having their wounds on such critical parts

as face, chest and head. 191 open wounds and 31 fractures were reported.

5. **An examination of symptoms suggests that there is need to monitor and evaluate the health status of those who were intensively exposed to gasses at short distances and for longer period.**
6. The Turkish Medical Association keeps the issue in its agenda and is closely interested in relevant developments. It has recently established a “Riot Control Agents Scientific Advisory Board” for this purpose.
7. The Turkish Medical Association asked the Ministry of Interior and General Directorate of Security in writing the nature and types of gasses used. Since different types of gasses are used, the public is in need of sharing clear information on this issue. Findings in the present report have not eliminated ongoing doubts.
8. For those who experience some health problems for the first time after exposure to gasses and other chemical substances, there is need for medical examination and a long-term follow up programme.
9. It is known that the European Court of Human Rights (ECHR) examined the case of Turkey for using teas gasses. In the decisions of the Court it is stated that the use of such gases may lead to various health effects including respiratory problems, nausea, vomiting, irritation in respiratory tract and eyes, spasm, pain in chest, burns in skin and allergy. It is also stated that extreme cases of exposure to these gasses may have more serious effects including severe damage to tissues in respiratory or digestive systems, oedema in lungs or internal bleeding (adrenal).
10. 10. The European Committee for Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) considers teas gas as a potentially as hazardous substance and makes reservation to its use in open spaces. The CPT says, “*If there is an exceptional case requiring its use, there must be clearly defined*



*safety measures. For example, persons exposed to gas should be provided immediate access to medical care and necessary medications should be made.”*

- 11.** It is of utmost importance and a necessity to assess the medium and longer-term effects of chemicals used on human health. Exposure to such gasses used in Turkey should be thoroughly examined including relevant laboratory analyses. The Turkish Medical Association will fulfil its responsibility in this process.
- 12.** The Ministry of Health should inform the public about the health dimension of the issue and launch a survey to identify and follow up health effects.

