

**DOKUZ EYLUL UNIVERSITY**  
**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**MEASUREMENT AND MANAGEMENT OF NOISE  
POLLUTION OF ENTERTAINMENT PLACES IN  
İZMİR**

**By**  
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**January , 2012**  
**İZMİR**

**MEASUREMENT AND MANAGEMENT OF NOISE  
POLLUTION OF ENTERTAINMENT PLACES IN İZMİR**

**A Thesis Submitted to the  
Graduate School of Naturel and Applied Sciences of Dokuz Eylül University  
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Environmental Engineering Program**

**By  
Özgür TÜRKEKUL**

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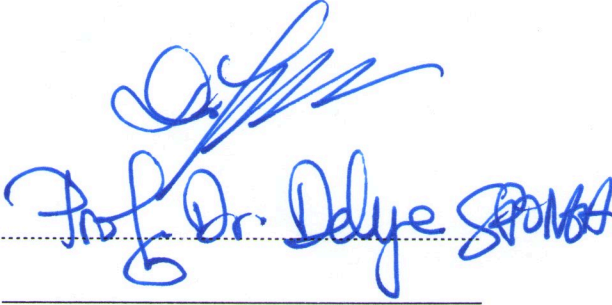
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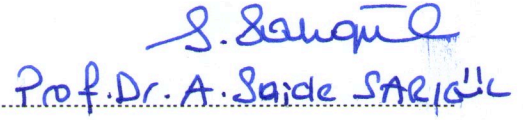


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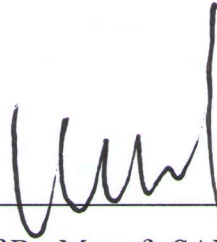
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# MEASUREMENT AND MANAGEMENT OF NOISE POLLUTION OF PLACES ENTERTAINMENT IN İZMİR

## ABSTRACT

Today, one of the major polluting sources of noise pollution caused by noise in the entertainment places is becoming increasingly important within the last few years. Especially, not making the city planning well, the music performed in open space and its being performed so close to the residential areas during the summer months in coastal areas, the absence of adequate sound insulation in buildings and workplaces where music is performed deepen this problem.

In this study, the entertainment venues in İzmir are examined by being separated into certain categories under the scope of Control and Management of Environmental Noise Regulations Amending the Regulations. The results obtained by the measurements and calculations of these entertainment places, categorized by the noise measurement device taken by Dokuz Eylül University numbered 201125 as part of scientific research project support unit, have been analyzed and evaluated under this regulation.

Consequently, the results obtained from the categorized entertainment places in terms of Control and Management of Environmental Noise Regulations Amending and again they have been compared with the limit values determined on the scope of Control and Management of Environmental Noise Regulations Amending the Regulations, precautions and recommendations for those entertainment venues not providing this have accounted for the result of this thesis.

**Keywords:** Assessment and management regulation of environmental noise, assessment and management of environmental noise regulations amending, entertainment.

# İZMİR'DEKİ EĞLENCE YERLERİNDEN KAYNAKLANAN GÜRÜLTÜNÜN ÖLÇÜMÜ VE DEĞERLENDİRİLMESİ

## ÖZ

Günümüzde önemli kirletici kaynaklardan biri olan gürültü konusu içinde yer alan eğlence yerlerinden kaynaklanan gürültü kirliliği son yıllarda gittikçe önem kazanmaktadır. Özellikle şehir planlamasının iyi yapılmaması, yaz aylarında sahil bölgelerinde yapılan müziğin açık alanda ve yerleşim alanlarına çok yakın olması, binalarda ve müzik yapılan işyerlerinde yeterli ses izolasyonunun olmaması bu sorunu derinleştirmektedir.

Bu çalışmada İzmir İlinde bulunan eğlence yerleri, Çevresel Gürültünün Denetimi ve Yönetimi Yönetmeliği'nde Değişiklik Yapılmasına Dair Yönetmelik kapsamında belli kategorilere göre ayrılarak incelenmiştir. Dokuz Eylül Üniversitesi 201125 numaralı bilimsel araştırma projesi kapsamında alınan gürültü ölçüm cihazıyla kategorilere ayrılan bu eğlence yerlerinin ölçümleri ve hesaplamaları yapılarak elde edilen sonuçlar yönetmelik kapsamında incelenmiş ve değerlendirilmiştir.

Sonuçta, Çevresel Gürültünün Denetimi ve Yönetimi Yönetmeliği'nde Değişiklik Yapılmasına Dair Yönetmelik Kapsamında kategorilere ayrılan eğlence yerlerinden çıkan sonuçlar, yine Çevresel Gürültünün Denetimi ve Yönetimi Yönetmeliği'nde Değişiklik Yapılmasına Dair Yönetmelik kapsamında belirtilen sınır değerlerle karşılaştırılmış ve bunu sağlamayan eğlence yerleri için alınacak tedbirler ve tavsiyeler tezin sonucunu oluşturmuştur.

**Anahtar kelimeler:** Çevresel gürültünün denetimi ve yönetimi yönetmeliği, çevresel gürültünün denetimi ve yönetimi yönetmeliğinde değişiklik yapılmasına dair yönetmelik, eğlence.

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# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Study Overview**

Environmental noise is a significant environmental pollution as air pollution, water pollution and solid waste. Noise pollution and its control has taken attention with the regulation issued in 1983, has become increasingly important on the scope of the “Assessment and Management of Environmental Noise” established especially after July 1, 2005, respectively issued on March 7, 2008 and after the June 4, 2010. The measurements about the environmental noise by measuring that stems from the entertainment places that included in the Assessment of Environmental Noise and its Management Regulation constitute the issue of this thesis.

The noise problem stemming from the entertainment places come into prominence in our country especially coastal and touristic areas during the summer months. In these months with the start of coastal tourism season, people who go to holiday resorts come across with this problem. The summer houses and resting areas being so close to each other and the music made in the open areas and also our buildings being so adjacent to active entertainment places rather deepend this problem.

The latest release, the Ministry of Environment and Planning, dated June 4, 2010 "Assessment and Management Regulation of Environmental Noise " because of the noise from the entertainment places, especially in relation with the 27 April 2011 with the new regulations issued by the Ministry of the Environment and Planning, "Environmental Noise Assessment and Regulation Amending the Regulation on management "has been published in the Official Gazette No. 27917.

Issued on June 4, 2010 within the Regulation on Assessment and Management of Environmental Noise, scheduled or unscheduled inspections be made in order to evaluate the complaint, and the neighbouring area within the municipal boundaries in accordance the environment act, devolution of powers to the municipalities, municipal boundaries, and

the devolution of powers to the provinces outside of the contiguous area local administrations, delegation of authority unless the Provincial Directorates of Environment, Planning, which are authorized under other legislation if necessary cooperation and coordination with agencies and organizations is done.

With the devolution circular note, numbered 2006/16 by the Ministry of Environment and Forestry abolished in 2006, a lot of municipal presidencies within this context, İzmir Metropolitan Municipality had jurisdiction, too.

By the Ministry of Environment and Planning, İzmir Metropolitan Municipality, together with the municipalities located within the contiguous area of Konak, Bornova, Karşıyaka, Bayraklı, Aliaga, Seferihisar and Torbalı Municipal Presidencies also were authorized about noise issue. Adjacent areas outside the boundaries of İzmir Metropolitan Municipality are under the authority of the Provincial Directorate of Environment, Planning and the Special Provincial Administration (Appendix 1).

Due to the visits of domestic and foreign tourists to İzmir, the coastal and tourist city of Turkey, especially in the summer months, the entertainment facilities being done in open areas, and their being near or adjacent to the affected constructions cause the rise in the noise complaints about entertainment.

## **1.2 The Aim of the Thesis**

The scope of this thesis is based on structures affected by noise from entertainment places located in İzmir. These structures being affected by the noise and not exceeding the specified noise limit rate indicated in "Evaluation and Management of Environmental Noise Regulations Amending the Regulations" is determined with the measurements done with the noise device. The effect of the environmental noise stemming from the 4 (four) types of entertainment places, defined in the same regulation, is examined for the affected structures and also the measurements to be taken have been defined.

By examining the environmental noise rates resulted from the activities of these 4 (four) types entertainment places in İzmir, suggestions and implementations within the framework of the Assessments of Environmental Noise and its Management Regulations have been composed. Out of these results, it is also thought that this thesis will be useful for the city planners, legislators and potential business managers.

Thus in this context;

- The definitions related to Environmental Noise and the effect of the noise on human health

- Literature Review

- In accordance with the measurements taken from the structures those affected by the 4 (four) types of entertainment places defined in Regulations, located in the adjacent areas in İzmir Metropolitan Municipality and not having authority in İzmir province, making calculations, the evaluation methods and giving information about these and making inferences is aimed.

- Discussion and evaluation is made in accordance with the results of measurement.

**CHAPTER TWO**  
**GENERAL (ENVIROMENTAL NOISE)**

**2.1 Technical Definitions of Noise**

Some technical definitions are given about the noise in this part (Özgüven, 2007).

Sound: The medium pressure which can be detected by the air, water, or a similar change in an elastic atmosphere. Sound spreads in the form of waves.

Noise: unpleasant, unwanted, disturbing sound.

Sound is an objective but noise is a subjective concept.

$$\text{Wavelength } (\lambda) = c / f \tag{2.1}$$

Where;

c: the speed of sound propagation (m / sec)

f: the frequency of sound- wave (Hz)

Hz: Number of cycles in a second

In Table 2.1 The propagation speed of sound at 21 °C temperature is shown.

Table 2.1 The propagation speed of sound at 21°C temperature (Özgüven, 2007)

<b><u>Ambient</u></b>	<b><u>Propagation Velocity (m / sec)</u></b>
Air	344
Lead	1200
Water	1450
Concrete	3000-3400
Wood	3300- 4300
Steel	5000
Glass	4000-5000

Frequency: The number of vibrations of sound waves per unit time and its symbol (unit) is Hertz (Hz) (Özgüven, 2007).

Decibelmeter: The device that is used to measure noise (Noise Meters Decibel Meter, 2011).

Decibel (dB): It is a logarithmic scale used to express significant quantities of the differences from each other (Official Gazette, 2010).

dBA: It is a kind of widely used sound level measurement in the control and assessment of the noise influence known as the A- weighted sound level giving more weight to the middle or high frequencies that the human hearing system is the most sensitive to low intensity sounds (Official Gazette, 2010).

dB => It is measured value (Özgüven, 2007).

dBA => It gives the sound that the ear perceives (Özgüven,2007).

dBC (the impact of the noise ): The noise resulting in the beating of the two masses together (Official Gazette, 2010).

Equivalent noise level (Leq): The fixed level, showing the change in levels in a certain time, usually measured as the sound level A- weighted that is equivalent to noise in terms of energy (Official Gazette, 2010).

Octave band: The frequency band that is used to reveal the change of the noise energy in accordance with the frequency, the twice as much of each others' lower and upper frequency limits and the band which is equal to 70% of the bandwidth of central frequency band (Official Gazette, 2010).

Very sensitive uses: Such as healthcare institutions bed serviced, educational institutions having boarding training periods, the use of child and elderly care homes (Official Gazette, 2011).

Less sensitive uses: Such as the use of administrative and trade buildings, child gardens, playing fields and sports facilities (Official Gazette, 2011).

Sensitive uses: Such as the use of housing, serving bed residential facilities, educational institutions, areas in open land and quiet fields residential areas (Official Gazette, 2011).

Highly sensitive usage areas: The determined area encompassing 250 meters from the borders very sensitive usage areas (Official Gazette, 2011).

Noise-sensitive uses: Very sensitive uses, sensitive uses and less sensitive uses (Official Gazette, 2011).

Live Music: It is the type of music made by using real musical instrument and / or sounds or recorded or electronically upgraded by using a sound source (Official Gazette, 2010).

The Level of Background Noise: Background noise refers to the total noise created in the same ambient at the same time by the other sources remained after the noise source in an environment is made silent (Official Gazette, 2010).

The Level of Sound Power :

Sound power (or acoustic power) is the power of sound energy emitted by the source of a sound source and this power's level is named as sound power level. Its symbol (unit) is dB (Özgüven, 2007 ).

$$L_W = 10 \log (W / W_o) \text{ It can be found with this equation.} \quad (2.2)$$

Where;

$L_W$  : Sound Power Level

$W_o = 10^{-12}$  Watt

$W$ : Sound Power

In Table 2.2 Some of the sound powers and their levels are demonstrated.

Table 2.2 Some of the Sound Powers and Sound Levels (Özgüven, 2007)

<u>Source</u>	<u>Sound (watt)</u>	<u>Sound Power Level (dB)</u>
Whisper	$10^{-9}$	30
Normal conversation	$10^{-5}$	70
Shouting out	$10^{-3}$	90
Truck horn	$10^{-1}$	110
Propeller-driven aircraft engines	1	120
Symphony orchestra	10	130
Four-engine propeller-driven aircraft	100	140
Four jet-propelled aircraft	$5 \times 10^4$	167
Saturn rocket	$5 \times 10^7$	197

Since sound can be detected by the change of the air pressure that is in touch with the ear membrane, the sound pressure created at a certain time by a sound source is more important than a sound source's sound power.

Sound pressure level,  $L_p$  is defined as;

$$L_p = 20 (\log P / P_0) \quad (2.3)$$

Where;

P: The root mean square of the sound pressure (root mean square)

$P_0$ : 20 micropascal ( $20 \times 10^{-6} \text{ N / m}^2$ )

## 2.2 Transactions in Decibels

Nowadays, the calculations about the transactions of decibels have been quite simplified by constituting graphics and charts related to these (Çevreorman, 2011).

### 2.2.1 Addition

The following Table 2.3 is for the additions.

Table 2.3 The Addition Process in Decibels (Çevreorman, 2011)

Addition in Decibels											
Difference in Level	0	1	2	3	4	5	6	7	8	9	$\geq 10$
Correction	3.0	2.5	2.1	1.8	1.5	1.2	1.0	0.8	0.6	0.5	0
Shortly	3	2			1					0	

### The Use of the Table:

1. The arithmetic difference between the two values are obtained.
2. The value is replaced on the line starting with the level difference of the table. (If the difference of the level is not the exact value, it must be rounded off to the nearest whole value)



3. The equivalent of the difference is found by the column where the difference is and the line beginning with the correction.

4. The obtained value is added to the highest value.

5. On the situations that more than two values have to be added, firstly the two levels are added, and then the other values are added to the total value obtained one by one.

### 2.2.2 Subtraction

Table 2.4 The Subtraction Process in Decibels (Çevreorman, 2011)

Subtraction in Decibels								
Level Difference	3	4	5	6	7	8	9	$\geq 10$
Correction	3	2.2	1.7	1.3	1	0.7	0.6	0
Briefly		-2		-1				

#### The Use of the Table:

1. The arithmetic difference between the two values are obtained.
2. The obtained value is replaced on the line beginning with the level difference on the table. (If the difference of the level is not the exact value, it must be rounded off to the nearest whole value)
3. The equivalent of the difference is found by the column where the difference is and the line beginning with the correction.
4. The obtained value is subtracted from the highest level.

### 2.2.3 A Sample Study

A sample implementation about the topic is submitted below.

$L_K$  = The Source Noise

$L_A$  = The Background Noise

including, as a result of a measurement to be found in the following values.

(While the Source is Operating)  $L_K + L_A = 75$  dBA

(While the Source is not operating)  $L_A = 66$  dBA

According to the measurements find the exceeding amount of the source's pure noise and background value.

Solution:

First of all, the difference between the two values are obtained as the arithmetic difference.

$$* 75 - 66 = 9 \text{ dB}$$

The obtained value is placed to the line starting with the level difference of the table.

If the difference is 9 dB, the value to be subtracted the highest level is 0.6 dB as will be seen on the table.

The equivalent of the difference is found by the column where the difference is and the line beginning with the correction:

$$* 0.6 \text{ dB}$$

The obtained value is subtracted form the highest level.

$$75 - 0.6 = 74.4 \text{ dB (Pure Source Noise)}$$

The exceeding amount of the background is  $74.4 - 66 = 8.4$  dB

## 2.3 Sources of Noise

Noise sources can be grouped in different ways. Noises, arising from air and solid environments in accordance with the forms of sound rise, can spread in an acoustic way from point, linear and planar sources as shown in Figure 2.1 (Çevreorman, 2011).

- \* Point Source
- \* Linear Source
- \* Plane Source

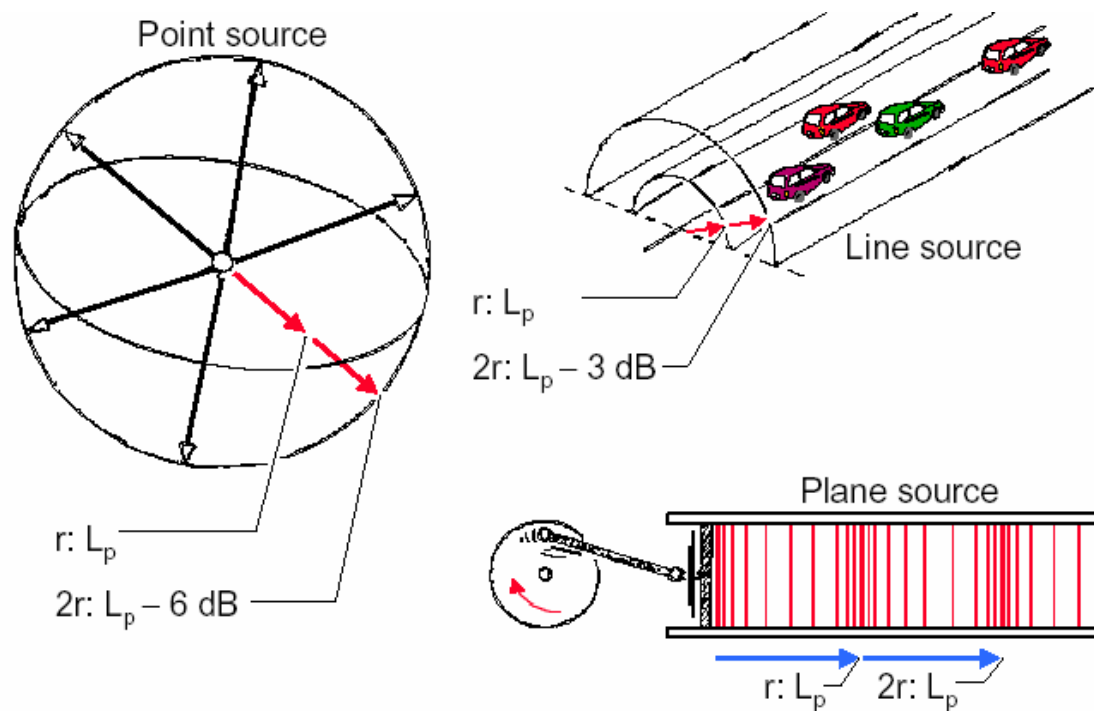


Figure 2.1: Noise sources in terms of acoustic (cevreorman, 2011)

**2.3.1 The sources of noise existing in open- air areas:** They are the noises generating from the sources out of the structures and not only their volume inside the structure but also the noise affecting people using open spaces outside the structures. These can be grouped as the following:

The noise of transportation (highways, sea route, railway, planes and airport noises)

Industrial noise (industry's vehicles, equipment and machinery in the workplace with a variety of activities arising from the noise).

Construction (construction area) noise (the noise of road and building construction works and construction machineries)

The noise related to human activities (talking loudly, shouting, children's voices, sports fields, shooting areas, radio, TV and music tones, etc.)

The purposeful noises because of the entertainment and commercial activities the entertainment and commercial noise (like open-air cinemas, entertainment places, upgraded ads, dealer voices, the sound of music cassettes and their sellers)

### ***2.3.2. Noise sources of the construction internals:***

They are the sounds arising from the internal of structures.

- Speech sounds
- Step Sounds
- The noise of household items
- High volume music sound
- The sound impact and the friction of the stuff
- The noise of slamming the doors
- The noise of offices
- The noise of the garage
- The noise of various machines and equipments (elevators, plumbing, etc)
- All kinds of private noises coming from the workplaces inside the constructions.

## 2.4 Classification of Noises

The classification of noise is in two types. (cevreorman, 2011)

### 2.4.1 *Stable Noise*

No change in the level of noise is observed over time.

**For example:** Fan, Air-conditioning noise.

### 2.4.2 *Unstable Noise*

It is the type of noise having significant changes in the level of noise over time being observed. It is divided into three kinds:

- Wavy Noise (Surface Grinding Noise)
- Discrete Noise (The noise of automatically cutting parts)
- Impact Noise (The noise of press)

## 2.5 Effects of Noise on Human Health

Human behaviors against the effects of noise are gathered in two groups. The first one is the psychological discomfort determined only by the release of senses and emotions; the latter is the physiological discomfort determined by various measuring methods. Therefore, the control of noise must be done during the phase of architectural design in terms of human health and comfort conditions. Three important factors can be taken into account in examining the effects of noise on people;

- Its making people get bored
- Blocking the communication,
- The risk of permanent hearing impairment.

Alongside these factors, the use of volume, at which time it is used, the duration and type of noise as there are many factors to be taken into account. Classification of the effects of noise is shown in Table 2.5 and the factors in terms of noise are given in Table 2.6

Table 2.5 The classification of Noise (Çevreorman, 2011)

(I) 1 <sup>st</sup> degree of noise 30 to 65 dBA	Feeling of discomfort Disturbance A sense of boredom Anger Concentration and Sleep disorders
(II) 2 <sup>nd</sup> degree of noise 65 to 90 dBA	Physiological noise Change in heartbeat Acceleration of respiration Reduction of pressure in the brain
(III) 3 <sup>rd</sup> degree of noise 90 to 120 dBA	Physiological noise Headache
(IV) 4 <sup>th</sup> degree of noise 120 to 140 dBA	Disorder in the inner ear
(V) 5 <sup>th</sup> degree of noise 140 > dBA	The burst of ear membrane

Table 2.6 Factors in Terms of Noise (Çevreorman, 2011)

<b>1) Physical Factors</b>	* Hearing damage
<b>2) Physiological Factors</b>	* Deformations of the body * Degradation of heartbeat * Hysteresis * Disorder of metabolism * Sleep disorders
<b>3) Psychological Effects</b>	* The nervous system becomes degenerated * Over-reactions * Displeasure, a sense of uneasiness
<b>4) Performance Effects</b>	* Talk with the initiative to have the event of interruption speech * Listening to and deal with difficulties * The disruption of concentration * Badly- affected resting

Although the beginning values of the noise levels that create psychological discomfort can easily be detected, sometimes it cannot be so easy to draw boundaries for the psychological discomforts. The reactions of human communities and individuals can have differences for each society. The society's getting affected of this change due to the increase in noise level is summarized in Table 2.7

Table 2.7 The Perceptions of the Society for the Change in Noise Level (Çevreorman, 2011)

<b>Increase in level (dB)</b>	<b>The perception of the Society to the change</b>	<b>The effect of Noise</b>
0	Not noticable	Non
3	The change can just be noticed.	Barely
3	The change can be easily noticed.	Less
5	Discontinuous complaints can be seen.	Medium Level
7	Being disturbed	Medium Level
7	Discontinuous complaints	High
10	Wide range complaints	Very High
15	Group reactions can be seen	Very High



The dB degrees of some noise types and their subjective evaluations are demonstrated in Table 2.8 and Table 2.9

Table 2.8 The dB values of some sound sources (Çevreorman, 2011)

<b>dB</b>	<b>Examples</b>	<b>Subjective Evaluations</b>
140	Close to the jet engine	<b>DAMAGING</b>
130	Onset of pain	
105	Heavy Rock Music	
100	the sound of car horns from 3 meters away	<b>VERY HIGH</b>
90	The noise of the city and the streets	
82	The noise of factories	
80	The school and canteen noise which don't have acoustic insulation.	<b>HIGH</b>
62	The road in open ways	
62	The noise of a secondary road	<b>MEDIUM</b>
50	The noise of offices	
40	Low- level played music at houses	<b>LOW</b>
20	Whispering	<b>VERY LOW</b>
8	Exchange of human breath	
0	The beginning of the structures	

Table 2.9 The Comparison of the Sound Levels of Different Sources (Çevreorman, 2011)

<b>dB</b>	<b>Related to House</b>	<b>Traffic</b>	<b>Aircrafts</b>	<b>The Reaction of Human</b>
160				Permanent damage to the ear
150				Continuous pain in the ear which is temporary
140-130			Jet engine (15 m away)	The situation in which the speech is impossible
120			IC Aero-Engine (15 m away)	
110		In case of a passing tank	For an altitude of 150m jet plane	Only talking by shouting is possible
100		Air-pressure drilling (183 m away)		
90		Status of the subway train	In the cabin of the civilian aircraft	Speaking with raised voice
80		engine horn		
70	High level radio music	Heavy Traffic		
60	Talking loudly	Inside a train or a bus		
50	Talking	Secondary road traffic		Normally conversation is possible
40	Private Office			
30	The rattling of clock	Silent street		
20	Silent Garden			
0-10				The start of hearing

## **CHAPTER THREE**

### **LITERATURE REVIEW**

Noise Resulting from Entertainment Places that is one of the sub issues of Environmental Noise, has started to attract more attention of the public, institutions, businesses and the society especially by the issued regulations and their being implemented after the year 2005. As a result of this, studies on this issue and projects to find solution to this problem has begun to increase in our country as well as in foreign countries.

In addition to the studies in this thesis and the recommendations for the control of the noise resulting from entertainment places done in the conclusion part of the thesis, the precautions taken against the noise due to the entertainment places in Germany and activities similar to those are perpetrated in a workshop done for this issue (Appendix 2).

Hence, it is crucial to think about to what extent the precautions taken against the entertainment places in Germany can be put into practice in our country and in İzmir if we take into consideration the climate, traditions and customs differences between our country and Germany.

Another study done for this issue is about the entertainment places being active in open areas in Bosphorus. In this study, online noise following systems is installed to the receiving points nearby to the entertainment places active in open areas in Bosphorus. By the installation of these systems the noise of the entertainment places there is followed regularly and consequently it is decreased by providing noise control in notable levels (Şansal, 2010).

Another study actualized in our country under this title is the evaluation of an entertainment place in Samsun in terms of environmental noise. As a result of this evaluation it is confirmed that the noise of this entertainment place is high above the Regulation limit values. By making frequency analysis, suitable insulation material is determined to decrease the noise of this entertainment place under the Regulation limit values. After placing the insulation material to the workplace determined as a result of

these studies, it is evaluated by making the measurements again in accordance with the Regulation (Aslan,2009).

## **CHAPTER FOUR**

### **MATERIAL AND METHOD**

In this section; (Çevreorman, 2011).

- Why the measurement is being operated,
- Where the measurement should be operated,
- When the measurement should be operated,
- The factors affecting measurement,
- The definition and general features of the measurement device,
- The definition and general characteristics of the meter,
- Information about the definition of 4 (four) types entertainment places, the demonstration of the measurement results and their calculations on the scope of the project

#### **4.1. Why is the measurement being operated?**

General purposes of measuring the noise are;

- Evaluating a complaint,
- Checking the eligibility of the law,
- Determining the number of the people who are exposed to noise,
- Researches,
- Calibration Verification,
- The Land Use Planning or Environmental Impact Assessment (EIA),
- Noise Mapping,
- Evaluating the effectiveness of those precautions.

#### **4.2. Where should the measurement be operated?**

In general, it is suggested to make the environmental noise measurements on the nearest points to the receivers at the complaint place or to operate at certain points. For this aim the measurements are operated

- At the place of the complaint
- On the direction on the way of source
- In such a manner that will behold the source

#### **4.3. When should the measurement be operated?**

The time period of the day on which the measurement will be held should be chosen appropriately.

In this context;

- the time span of the action that the trading hours of the activity (the hours of the noise source)
- the changes in the noise levels,
- the change of the noise level during a day due to air and transportation activities,
- While evaluating the noise at times of morning, evening and night, should be done by taking into consideration the possible needs.

#### **4.4. The factors affecting the measurements**

Factors affecting the measurement can be ordered as the following;

- The measured event
- The effect of the measurement o the event being measured.

- Environmental conditions
- The features of the devices being used
- The way using the tools
- The person making the measurement.

#### **4.5 The definition and general features of the measurement device**

In measurement studies the four channeled noise device labeled SVAN 958 is used (Svantek, 2011).

SVAN 958 Four Channels Sound and Vibration Analyser with time domain signal recording. It is a fully digital, four channels 20 kHz signal analyser including Type 1 sound level meter (meeting IEC 61672) and vibration meter (meeting ISO 8041:2005).

Simultaneously to the meter mode, SVAN 958 can perform advanced frequency analysis including 1/1 or 1/3 octave analysis, FFT analysis including cross spectra's and sound intensity measurements. Reverberation Time measurements, noise dose meter and rotation speed measurements are also available. Moreover, SVAN 958 has an exceptional feature of time domain signal recording to the USB memory stick.

SVAN 958 is an ideal choice for the "Human Vibration" (according to the ISO 2631-1,2&5 and ISO 5349-1&2 standards). It is offered with all required weighting filters and comprehensive range of equipment for measuring hand-arm and whole-body vibration.

SVAN 958 uniquely does the analysis in four channels. Each of the four channels can work simultaneously with independently configured input (transducer type), filters and RMS detector time constants (e.g. simultaneous three axis measurement of the Whole-Body vibration and noise dose).

Recently SVAN 958 has been improved by implementation of the special KB filter for building vibration measurements meeting the DIN 45669-1 standard (DIN 4150 standard refers to this filter).

SVAN 958 can also perform noise measurement with accuracy of Type 1. Thanks to its four channels it can measure sound by the use of four independent microphones in the same time.

What is more, in sound meter mode, each channel uses three independently defined profiles which means that SVAN 958 can perform "multidimensional" analysis of measured signal in every of four channels. In practice it gives a user the possibility to obtain  $L_{eq}$ ,  $L_{Max}$ ,  $L_{Min}$ ,  $L_{Peak}$ ,  $Spl$ ,  $SEL$  with different weighing filters in the same time.

Very powerful measurement capability is supported by the advanced time history logging in non-volatile 32 MB internal memory. SVAN 958 is also equipped with USB port which allows to storage data in the USB Memory Sticks of size even 8 GB.

Together with SVAN 958 we provide the SC 16 cable for the connection with the PC. Easy data downloading to the PC is ensured by the SvanPC+ software (base module free of charge). Fast USB 1.1 interface (12 MHz) creates real time link for the PC "front-end" application of the SVAN 958. Instrument can be fully remotely controlled. Optionally, SVAN 958 can be equipped with RS 232 or IrDA port.

SVAN 958 is powered from NiMH standard or rechargeable AA batteries. The powering of the instrument from the External DC power source or USB interface is also provided.

Robust and light weight design accomplishes the exceptional features of this new generation instrument.

#### **4.5.1 Features**

- 1) Four channels, 20 kHz real time, simultaneous sound and vibration measurements
  - 2) FFT real time analysis up to 1600 lines in 20.0 kHz band
  - 3) 1/1 and 1/3 octave real time analysis
- Human Vibration measurements meeting ISO 8041:2005 including VDV and MTVV
- 4) Noise measurements Type 1, IEC 61672:2002



- 5) Acoustic dose meter function
- 6) Sound Intensity measurements
- 7) Reverberation Time measurements RT 60
- 8) FFT cross spectra's Advanced Data Logger with 32 MB non-volatile internal memory
- 9) Advanteged Data Longer with 32 MB non- volite internal memory
- 10) USB Memory Stick provides almost unlimited logging capability
- Time domain signal recording
- 11) Advanced trigger and alarm functions
- 12) USB 1.1 Client and USB Host, optional RS 232 and IrDA interfaces
- 13) Integration time programmable up to 24 h
- 14) Powered by 4 x AA standard or rechargeable batteries
- 15) Easy in use, hand held, light weight and robust case

#### **4.6 Information about the definition of 4 (four) types entertainment places, the demonstration of the measurement results and their calculations on the scope of the project**

In this project, the effects of 4 (four) types entertainment places, defined on the scope of the Assessment of Environmental Noise and Management Regulation Amending, to sensitive constructions are inspected. An evaluation is made in accordance with a complaint about an entertainment place while this inspection was being carried out. The studies about this are detailed below.

- 1) In the Regulation according to this definition, station venues for these 4 (four) types entertainment places are chosen.
- 2) Sensitive points close to these chosen entertainment places are determined.
- 3) Oblivious measurements are made from sensitive points especially on Friday, Saturday and Sunday evenings and nights when the highest noise is emitted from the noise of entertainment. Later, the background noise levels are measured when the music 26

broadcast is interrupted. Here the measurements are made with respect to “Leq” described in the regulation for the entertainment noise.

4) The calculations of the measurements values are made with the help of the formulas demonstrated below (cevreorman, 2011).

$$L_{\text{source}} = 10 \log(10^{L_{\text{measured}}/10} - 10^{L_{\text{background}}/10}) \quad (4.1)$$

The effect to the background:  $L_{\text{source}} - L_{\text{background}}$

Where;

$L_{\text{source}}$  : Noise of the source

$L_{\text{measured}}$  : The environment measured while the source is working and the noise of the source

$L_{\text{background}}$  : The ambient noise measured when the source is silenced

The calculated values are compared with the limit values specified on the scope of Environmental Noise Assessment and Management Implementing Regulation Amending the Regulation. Thus it is determined whether they are exceeding the limits or not and the results are shown on a table.

## CHAPTER FIVE

### RESULT AND DISCUSSION

In this part, the definitions of 4 (four) types of entertainment places, the measurements, the calculations and the comparisons of Regulation limit values are done and the results are explicated.

#### 5.1. The entertainment venue active in closed area but in an adjacent order

These kinds of entertainment places must be active under, above or next to the sensitive or high sensitive constructions and must be in an adjacent order. Here, the adjacent order points out that the building is connected with these constructions, with walls and/or other ways.

Assessment and Management of Environmental Noise Regulations Amending Article 24 paragraph b it is stated “the environmental noise stemming from the entertainment place adjacent order to the affected construction cannot exceed the background noise level value inside the affected construction in terms of the Leq noise indicator.”

According to this, the results related to the measurements of the constructions affected by the music in the entertainment place are given in the Table 5.1

Table 5.1 Results of Noise Measurement

Time of the Measurement	Place of the Measurement	The date of the Measurement	Results of Measurement	
			A-Weighting	C-Weighting
			Leq	Leq
While the business is active (There is music)	Sensitive construction indoor (bedroom)	07.10.2011	44.36	55.31
While the business is not active (There is no music-Background)	Sensitive construction indoor (bedroom)	07.10.2011	39.05	45.65

The found values here are replaced in the formula shown below and the  $L_{\text{source}}$  value is found in accordance with A and C Weightings.

$$L_{\text{source}} = 10 \log(10^{L_{\text{measured}}/10} - 10^{L_{\text{background}}/10})$$

$$L_{\text{source}} = 10 \log(10^{45.48/10} - 10^{39.05/10})$$

$$L_{\text{source}} = 44.36 \text{ dBA}$$

$$\text{The effect to the background} = L_{\text{source}} - L_{\text{background}}$$

$$\text{The effect to the background} = 44.36 - 39.05$$

$$\text{The effect to the background} = 5.31 \text{ dBA}$$

$$L_{\text{source}} = 10 \log(10^{L_{\text{measured}}/10} - 10^{L_{\text{background}}/10})$$

$$L_{\text{source}} = 10 \log(10^{55.31/10} - 10^{45.65/10})$$

$$L_{\text{source}} = 54.81 \text{ dBC}$$

$$\text{The effect to the background} = L_{\text{source}} - L_{\text{background}}$$

$$\text{The effect to the background} = 54.81 - 45.65$$

$$\text{The effect to the background} = 9.16 \text{ dBC}$$

## **5.2 The entertainment venue active in closed area but not in an adjacent order**

These kinds of entertainment places are not in adjacent order with sensitive or high sensitive constructions and they are active places in closed areas being independent from those places.

Assessment and Management of Environmental Noise Regulations Amending Article 24 paragraph c it is stated “the environmental noise stemming from the entertainment place that’s not adjacent order to the affected construction cannot exceed the background noise level from 5 dBA and 7 dBC in terms of the  $L_{\text{eq}}$  noise indicator.”

According to this, the results related to the measurements of the constructions affected by the music in the entertainment place are given in the Table 5.2

Table 5.2 Results of Noise Measurement

Time of the Measurement	Place of the Measurement	The date of the Measurement	Results of Measurement	
			A-Weighting	C-Weighting
			Leq	Leq
While the business is active (There is music)	Sensitive construction outdoor (front door)	25.09.2011	50.97	60.65
While the business is not active (There is no music-Background)	Sensitive construction outdoor (front door)	25.09.2011	46.88	57.60

The found values here are replaced in the formula shown below and the  $L_{source}$  value is found in accordance with A and C Weightings.

$$L_{source} = 10 \log (10^{L_{measured}/10} - 10^{L_{background}/10})$$

$$L_{source} = 10 \log (10^{50.97/10} - 10^{46.88/10})$$

$$L_{source} = 48.82 \text{ dBA}$$

$$\text{The effect to the background} = L_{source} - L_{background}$$

$$\text{The effect to the background} = 48.82 - 46.88$$

$$\text{The effect to the background} = 1.94 \text{ dBA}$$

$$L_{source} = 10 \log (10^{L_{measured}/10} - 10^{L_{background}/10})$$

$$L_{source} = 10 \log (10^{60.65/10} - 10^{57.60/10})$$

$$L_{source} = 57.67 \text{ dBC}$$

$$\text{The effect to the background} = L_{source} - L_{background}$$

$$\text{The effect to the background} = 57.67 - 57.60$$

The effect to the background = 0.07 dBC

### 5.3 The entertainment venue active in open areas

These kinds of entertainment places are not in adjacent order with sensitive or high sensitive constructions and they are active places in open areas being independent from those places.

Assessment and Management of Environmental Noise Regulations Amending Article 24 paragraph c it is stated “the environmental noise stemming from the entertainment place that’s not adjacent order to the affected construction cannot exceed the background noise level from 5 dBA and 7 dBC in terms of the Leq noise indicator.”

According to this, the results related to the measurements of the constructions affected by the music in the entertainment place are given in the table 5.3

Table 5.3 Results of Noise Measurement

Time of the Measurement	Place of the Measurement	The date of the Measurement	Results of Measurement	
			A-Weighting	C-Weighting
			Leq	Leq
While the business is active (There is music)	Sensitive construction outdoor (front door)	11.09.2011	43.05	45.65
While the business is not active (There is no music-Background)	Sensitive construction outdoor (front door)	11.09.2011	35.39	43.89

The found values here are replaced in the formula shown below and the  $L_{source}$  value is found in accordance with A and C Weightings.

$$L_{source} = 10 \log(10^{L_{measured}/10} - 10^{L_{background}/10})$$

$$L_{source} = 10 \log(10^{43.05/10} - 10^{35.39/10})$$

$$L_{\text{source}} = 42.23 \text{ dBA}$$

$$\text{The effect to the background} = L_{\text{source}} - L_{\text{background}}$$

$$\text{The effect to the background} = 42.23 - 35.39$$

$$\text{The effect to the background} = 6.84 \text{ dBA}$$

$$L_{\text{source}} = 10 \log(10^{L_{\text{measured}}/10} - 10^{L_{\text{background}}/10})$$

$$L_{\text{source}} = 10 \log(10^{45.65/10} - 10^{43.89/10})$$

$$L_{\text{source}} = 40.87 \text{ dBC}$$

$$\text{The effect to the background} = L_{\text{source}} - L_{\text{background}}$$

$$\text{The effect to the background} = 40.87 - 43.89$$

$$\text{The effect to the background} = - 3.02 \text{ dBC}$$

#### **5.4 Multiple entertainment venues active in open areas**

These kinds of entertainment places are not in adjacent order with sensitive or high sensitive constructions and they are more than one and they're active places in open areas being independent from those places.

Assessment and Management of Environmental Noise Regulations Amending Article 24 paragraph ç it is stated "total noise level emitting from multiple entertainment places to the environment cannot exceed the background noise level range between 7- 10 dBA in terms of Leq indicator. By basing on this range, total environmental noise level is determined by the Provincial Environment Council Decision by taking factors into consideration such as the number of the people affected by noise exposure in the field, the distance between the noise source and noise sensitive spaces. In case of exceeding the limit value signified in this article, each entertainment place contributing to the background noise level is equally responsible for the limit value exceeding. After determining their contribution rates to the noise, each business place takes the necessary precautions."

With reference to the article of this regulation it is stated that multiple entertainment venues selected for the measurement issued by the Ministry of Environment, Planning, in Circular No. 2011/ 11 item 5 “Alongside with commercial buildings, noise- sensitive uses located in areas where dense residential areas are, it should be determined as 8 dBA.” (Circular, 2011/ 11)

According to this, the results related to the measurements of the constructions affected by the music in the entertainment place are given in the Table 5.4

Table 5.4 Results of Noise Measurement

Time of the Measurement	Place of the Measurement	The date of the Measurement	Results of Measurement
			A-Weighting
			Leq
While the business is active (There is music)	Sensitive construction outdoor (front door)	17.09.2011	59.2
While the business is not active (There is no music- Background)	Sensitive construction outdoor (front door)	17.09.2011	55.5

The found values here are replaced in the formula shown below and the  $L_{source}$  value is found in accordance with A and C Weightings.

$$L_{source} = 10 \log(10^{L_{measured}/10} - 10^{L_{background}/10})$$

$$L_{source} = 10 \log(10^{59.2/10} - 10^{55.5/10})$$

$$L_{source} = 56.78$$

$$\text{The effect to the background} = L_{source} - L_{background}$$

$$\text{The effect to the background} = 56.78 - 55.5$$



The effect to the background = 1.28 dBA

The results calculated due to the measurements are given in Table 5.5 by being compared with the Regulation limit values.

Table 5.5 Results of Noise Measurement

<b>1) The entertainment venue active in closed area but in an adjacent order</b>			
The effect to the background	Regulation limit value	Comparison with Regulation limit value	Result
5.31 dBA , 9.16 dBC	It cannot exceed the background noise level value.	44.36 dBA > 39.05 dBA 54.81 dBC > 45.65 dBC	Limit value is not provided.
<b>2) The entertainment venue active in closed area but not in an adjacent order</b>			
The effect to the background	Regulation limit value	Comparison with Regulation limit value	Result
1.94 dBA, 0.07 dBC	5 dBA, 7 dBC	1.94 dBA < 5 dBA 0.07 dBC < 7 dBC	Limit value is provided.
<b>3) The entertainment venue active in open areas</b>			
The effect to the background	Regulation limit value	Comparison with Regulation limit value	Result
6.84 dBA,-3.02 dBC	5 dBA, 7 dBC	6.84 dBA > 5 dBA -3.02 dBC < 7 dBC	Limit value is not provided.
<b>4) More than one entertainment venues active in open areas</b>			
The effect to the background	Regulation limit value	Comparison with Regulation limit value	Result
1.28 dBA	8 dBA	1.28 dBA < 8 dBA	Limit value is provided.

If the Table 5.5 is to be interpreted the following can be said;

It is seen that the results for “The entertainment venue active in closed area but in an adjacent order” and “The entertainment venue active in open areas” do not provide the limit values signified in Assessment and Management of Environmental Noise

Regulations Amending. However in the results of “The entertainment venue active 34 closed area but not in an adjacent order” and “More than one (multiple) entertainment venues active in open areas” it is realized that the limit values are provided determined in Assessment and Management of Environmental Noise Regulations Amending. “The entertainment venue active in closed area but in an adjacent order” and “The entertainment venue active in open areas” are those not providing the Regulation limit value should make their noise as a result of their musical activities by providing the limit values with taking the necessary precautions. The precautions to be taken for these are explained in the results and suggestions parts of the thesis.

## **CHAPTER SIX**

### **CONCLUSION AND RECOMENDATIONS**

In this thesis; “measurement and management of noise pollution of entertainment places in İzmir”, first of all, to make the noise measurements in exact places in terms of, Dokuz Eylül University numbered 201125 as part of scientific research project support unit the noise measurement device modeled SVAN 958 is taken and in the study. After the device is taken 4 (four) types of entertainment places are determined to be evaluated in terms of “Assessment and Management of Environmental Noise Regulations Amending”. Thus, the entertainment places suitable for these definitions and the constructions mostly affected by those places are determined in İzmir province.

In the beginning of the thesis, the techniques of noise matter and its effects on human health are researched and general information about these subjects is given.

After this, explanations related to the measurement are signified in Material and Methods part and it is explained how the measurements of the selected 4 (four) types of entertainment places are operated.

In this context, measurements are operated when the determined entertainment places are most active and on Friday, Saturday and Sunday daytimes, evening and night hours when the noise of music affect the constructions mostly. According to this, the calculations of the measurements taken from entertainment places are compared with the limit values on the scope of Assessment and Management of Environmental Noise Regulations Amending. Thus, the results are shown on the Table 5.5

In Table 5.5 , “The entertainment venue active in closed area but in an adjacent order” and “The entertainment venue active in open areas” are the places that cannot provide the limit values and the proposed precautions for these places to provide the limit values signified in Regulation are listed in this part of the thesis below.

### **6.1 The entertainment venue active in closed area but in an adjacent order**

First of all, for these kinds of entertainment places the sound insulations of constructions should be made well.

Secondly, Sound absorber material should be put between the entertainment place and the affected constructions. For instance; rock wool, foam.

There should be double doors system for the entrances of the entertainment places.

The doors and the windows of the entertainments places should be closed when they are active and when they are making music noise; also indoors music broadcast should be performed.

There should be double glazed and fixed windows for those places and also they should be sound- proof.

The number of the speakers, forming the sound source inside the entertainment place should be increased and the dispersal of the sound power through the place proportionally should be provided.

By this way, with these taken precautions the Regulation limit values can be provided for the entertainment venue active in closed area but in an adjacent order.

### **6.2 The entertainment venue active in open areas**

For these kinds of entertainment places those are active in open areas and different from closed areas it is quite difficult to take precautions and providing the Regulation limit values because meteorological factors, the distance between the place and the affected constructions, background effect, the type of the music are the factors that are affecting the results in a negative way if the sound spreads in waves in open areas is

thought. To explain these it can be said;

### ***6.2.1 Meteorological Factors***

Meteorological factors can increase the effect of the music in open areas to the constructions. For instance, wind blowing from the working place which is broadcasting music to the affected construction can increase the effect of the music. Hence, the results of the measurement emerge high.

### ***6.2.2 Distance***

If the nearness distance of the entertainment places' rises, the affecting level due to the noise rises, too.

### ***6.2.3 Background Effect***

It is very difficult for the music noise of an entertainment place that is active in such a surrounding whose background plan is low, to be under the Regulation limit values.

### ***6.2.4 The effect of the music type***

It is quite difficult for the music in entertainment places to be under the Regulation limit values if the music is broadcasted with high sound power speakers and percussion instruments.

It is seen that the problem in the entertainment places are intensive especially in summer months when the monthly graphics of the complaints done to Izmir Metropolitan Municipality for the last 3 (three) years are analyzed and the situations signified above are taken into consideration.(Appendix 3)

Arise in activities of open area entertainment places and the nearness of the affected constructions to these places make the dealing of this problem difficult.

To deal with this, all entertainment places in open areas should be gathered in a certain area and permission shouldn't be given for constructing sensitive and high sensitive buildings near to those areas and to think inversely permission shouldn't be given to the entertainment places, which is going to be active especially in open areas, near to sensitive or high sensitive constructions.

To conclude, it is not easy to implement all these things if the entertainment places in İzmir are thought. Especially, the city planning may not be appropriate for these in most of the zones. However, entertainment activities should be regarded as the necessities of a city. Thus, necessary precautions should be taken and necessary controls should be made by the competent authorities for the entertainment places in order to continue their facilities by providing the Regulation limit values.

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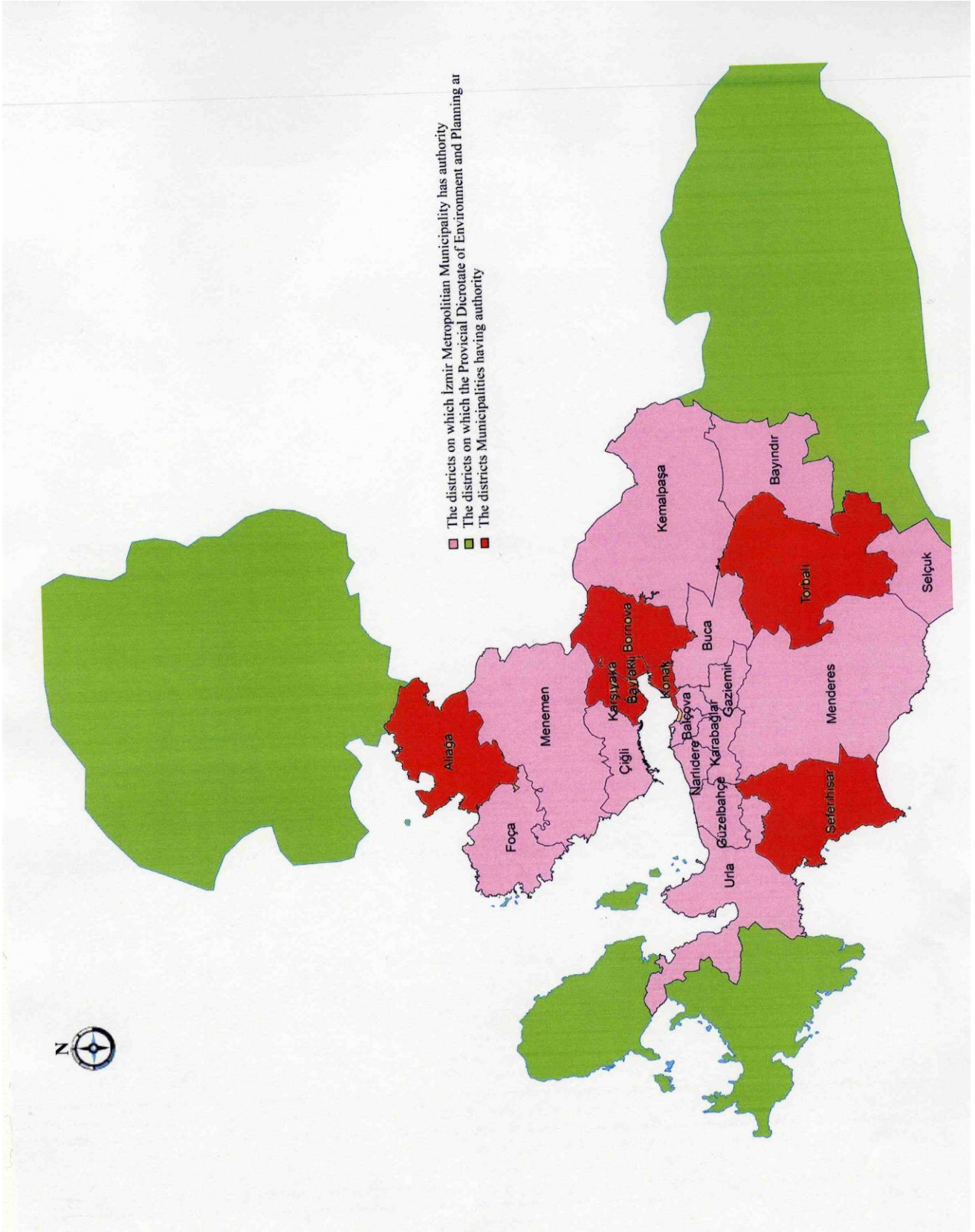
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## **APPENDICES**

**APPENDIX -1 :**

**THE DISPERSION OF THE ATTRIBUTIONS IN TERMS OF NOISE IN İZMİR.**



**APPENDIX-2 :**

**OFFICIAL DOCUMENTS SHOWING THE NUMBERS OF THE INSPECTION  
DONE BY İZMİR METROPOLITAN MUNICIPALITY BASED ON THE NOISE  
COMPLAINTS OF THE YEARS 2009, 2010 AND 2011.**



**T.C.**  
**İZMİR BÜYÜKŞEHİR BELEDİYE BAŞKANLIĞI**  
**Çevre Koruma ve Kontrol Dairesi Başkanlığı Çevre Koruma ve Kontrol Şb.Müdürlüğü**

Sayı : M.35.1.İBB.0.22.01.61103/3689 /24718  
Konu : Rapor

01.12.2011

DOKUZ EYLÜL ÜNİVERSİTESİNE  
(Çevre Araştırma ve Uygulama Merkezi)

İlgi:D.30.2.DEÜ.0.17.40.00/117 sayılı yazınız.

İlgi yazı ile İzmir İlinde bulunan Eğlence Yerleri hakkında Belediyemize gelen son üç yıla şikayet verileri istenmiş olup yapılan çalışma sonucu hazırlanan denetim sayıları ve aylara göre dağılımı gösteren tablo aşağıda belirtilmiştir.

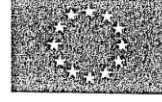
Bilgilerinizi rica ederim.

	2009	2010	2011
Ocak	15	6	8
Şubat	10	11	3
Mart	7	15	11
Nisan	6	5	6
Mayıs	15	8	6
Haziran	19	25	8
Temmuz	38	45	21
Ağustos	37	24	8
Eylül	18	15	25
Ekim	10	10	10
Kasım	8	6	9
Aralık	13	9	-
<b>TOPLAM</b>	<b>196</b>	<b>179</b>	<b>115</b>

  
 Serpil BARAN  
 Başkan a.  
 Genel Sekreter Yardımcısı

**APPENDIX-3:**

**THE NOTES THAT I HAD TAKEN IN A WORKSHOP ABOUT ENTERTAINMENT  
NOISE IMPLEMENTED IN APRIL , 16 AND 17, 2008 IN ANTALYA.**



**ÇEVRESEL GÜRÜLTÜ İLE İLGİLİ AB DİREKTİFİNİN UYUMLAŞTIRILMASI  
VE UYGULAMASI  
AVRUPA BİRLİĞİ EŞLEŞTİRME PROJESİ  
TR/2004/IB/EN/02**

**EĞLENCE GÜRÜLTÜSÜ ÇALIŞTAYI**

**16/17 Nisan 2008  
Porto Bello Hotel Resort and Spa  
Akdeniz Bulvarı 6. sok.ak  
Konyaaltı- Antalya**

**Gündem**

Çarşamba 16 Nisan 2008

Toplantı Yöneticisi: Çevre ve  
Orman Bakanlığı temsilcisi

- 09:00 Katılımcıların kaydı
- 09:30 Çevre ve Orman Bakanlığı temsilcisi  
“Hoşgeldiniz”
- 09:45 Dr. Rudolf Brüggemann  
Çevre, Doğal Koruma ve Nükleer Güvenlik Federal Bakanlığı, Berlin  
Almanya  
“Almanya’daki boş zaman aktivite ve spor faaliyetleri alanlarına ilişkin gereksinimler”
- 11:15 Çay ve kahve arası
- 11.30 Herwig Neufeldt  
Çevre ve İklim Eyalet Bakanlığı, Hannover, Aşağı Saksonya, Almanya  
“Hannover şehrinde gerçekleştirilmiş EXPO 2000’de gürültü yönetim konusunda edinilen tecrübeler”
- 13:00 Öğle yemeği arası

- 14:00 Dr. Martina Herrmann  
Sağlık, Çevre Koruma ve Tüketici Koruma Senato İdaresi, Berlin,  
Almanya  
“Berlin’de boş zaman faaliyetlerine ilişkin gürültü yönetimi”
- 15:30 Çay ve kahve arası
- 15:45 Helmut Jahn  
Münih Belediyesi, Almanya  
“Münih’deki etkinliklerde gürültü yönetimi – Ekim Festivali’nden  
Rolling Stones Konseri’ne”
- 17.15 İlk günün bitimi

Perşembe, 17 Nisan 2008

Toplantı Yöneticisi: Çevre ve Orman  
Bakanlığı temsilcisi

- 09.00 Silvia Hecker  
Dresden Belediyesi, Almanya  
“Şehir’de boş zaman aktivite alanlarıyla sessiz bir çevre arasındaki  
uyum”
- 10:30 Çay ve kahve arası
- 10:45 Uwe Jende  
Düsseldorf Belediyesi, Almanya  
“Düsseldorf’taki restoranlar/cafeler/barlar’da (açık ve kapalı) ve sokak  
festivallerinde gürültü yönetimi”
- 12:45 Öğle yemeği
- 14:00 Kısa Dönem Uzmanlar  
“Antalya’da eğlence gürültüsü için olası önlemler”
- 15.30 Tartışma ve sonuçlandırma
- 16:00 Çalıştayın bitimi



***Antalya'da yapılan bu çalıştayda her kişinin yaptığı sunumların, kendimce önemli bulduğum husularını, sırasıyla aşağıda belirtmiş bulunmaktayım.***

#### **Çevre Bakanlığı Temsilcisi Sunumu:**

-Gürültüyü azaltmak için Avrupa Birliği Eşleştirme Projesi kapsamında gürültü haritaları ve eylem planlarının oluşturulduğunu,

-Bu proje kapsamında Eğlence Gürültüsünün söz konusu olmadığını ancak bu konunda yer almasının gerekliliğinin anlaşılması üzerine böyle bir çalıştayın yapıldığını,

-2008 yılı yaz aylarında Gürültü Haritaları ve Gürültü Kontrol Yönetmeliği El Kitabının Çevre Bakanlığı'nın Web sayfasında yayınlanacağı,

Yukarıdaki hususlar Bakanlık Temsilcisince ifade edilmiştir.

#### **Dr. Rudolf Brüggemann Sunumu:**

-Almanya'daki boş zaman aktivite ve spor faaliyetleri alanlarına ilişkin gereksinimlerin

a)Spor Alanları Kararnamesi

b)Boş Zaman Aktiviteleri Yöneticiliği

c)Federal Emisyon Yasaları ile yerine getirildiği,

-Spor Alanları Kararnamesi'nde bir bölgede yapılacak olan spor faaliyetinin ne olduğu ve bu faaliyet kapsamında öncesinde ve faaliyet esnasında organizatör firmanın gürültüye karşı alması gerekli önlemlerin neler olduğunu,

-Emisyon Yasası'na göre spor faaliyetinin yapıldığı gündüz saatlerinde gürültü seviyesinin 70 dBA,gece için 65 dBA sınır değerlerini sağlaması,bunlar sağlanmıyorsa ona göre tedbir alındığını(faaliyete çalışma saati kısıtlaması getirilmesi,gürültü perdesi yaptırıldığını vb...)

-Boş zaman Aktiviteleri eyalet bazında çıkan bir yönetmelik olduğunu,burada eyaletlere serbestlik bırakıldığını ve her eyaletin kendi bazında mevzuatının olduğunu,

Yukarıdaki hususlar yetkilisince ifade edilmiştir.

#### **Herwig Neufeldt Sunumu:**

Hannover şehrinde gerçekleştirilen EXPO 2000 gürültü yönetimi konusunda;



-Bu organizasyon için en kritik emisyon noktalarının tespit edildiğini,bunun için ziyaretçi akınlarının olacağı bölgelerin tespit edildiğini.(1.Emisyon noktası)

-Yoğun bir trafiğin olacağını bu sebeple görevli personelle ziyaretçilerin çok farklı saatlerde giriş ve çıkışlarının sağlandığını.(2.Emisyon noktası)

-Genel Değerlendirmede emisyon referans değerlerinin aşılabileceğini bu nedenle EXPO 2000 ve Federal dairenin farklı iki mühendislik grubundan danışmanlık hizmeti aldığı,

-Diğer yandan iyi bir halkla ilişkiler çalışması yürütüldüğünü,özellikle yakın meskenlerde ne gibi gürültü azaltım önlemlerinin alınabileceğini,

-Mesken sahiplerinden gelecek şikayetler ve fuar sahiplerinde bunlardan hoşlanmaması nedeniyle;

Burada ortak anlaşma bulunmaya çalışıldığını,bununda aşama aşama yapıldığını,öncelikle güven ortamının yaratıldığını,mesken sahiplerinden hiçbirşeyin gizlenmediğini,her şeyin anlatıldığını,onları en az şekilde rahatsız edecek gürültü tedbirlerinin alınacağını,gürültüyü tek bir alan yerine genele yayarak azaltılacağını ve bu organizasyonun güvenli kılınması için organizasyon boyunca ölçüm alınacağını ve kontrollerin yapılacağını,

-Bunların sonucunda pozitif bir sonuç elde edildiğini,çok olumlu tepkiler alındığını,

-Bu başanın fuar çevresindeki yerlerin tek tek incelenmesi ile elde edildiğini,

-Organizasyon EXPO ve Hannover arasında çok güzel bir ilişkinin yürütüldüğünü,

-Basın ve siyasi tüm kaynakların kullanıldığını,

-Ses sistemlerine sınırlama getirilerek çok sıkıntılı yerler gürültü perdeleri konulduğunu,

-Mobil ölçüm istasyonları ile arızaların kısa sürede kontrol edildiğini,

-Organizasyon boyunca tüm şikayetlerin kayıt altına alınarak,sorumlu kurumca kontrol edildiği,sonuçlardan şikayet sahiplerinin bilgilendirildiği ve dosyalandığını,

-Sonuç olarak; gürültünün karşılıklı şeffaf ve iyiniyetle yapıldığı takdirde verimli sonuçların alınacağını görüldüğünü,

Yukarıdaki hususlar yetkilisince ifade edilmiştir.

### **Dr.Martina Herrmann Sunumu:**

-Berlin'de yılda 100 adet büyük organizasyon yapıldığını,

-Özellikle gençlerin çok para harcamasının bu tür organizasyonları cazip hale getirdiğini

-Kendi eyaletleri için eyalet emisyon yasaları çıkarttıklarını, aşırı ses çıkaran aletlerin yasaklandığını, ayrıca 50.000 EURO'ya kadar para cezalarının verildiğini,

Şayet böyle bir organizasyon yapılacaksa, bu organizasyon için aşağıdaki belgelerin istendiği,

a) Organizasyonun yeri beyan edilmeli

b) Organizasyon türü

c) Sahne nerede olacak

d) Emisyon tahminleri

-Müzik konserlerinde ses kontrolü yapıldığını,

-Bu tür organizasyonlarda oradaki insanlar için cazip hale getirilebileceği (bedava bilet verilmesi, kabul edenleri organizasyon boyunca tatile gönderilmesi vb...)

-Sonuçta en yoğun şehir merkezlerinde bile gerekli önlemler ve düzenlemelerle bu tür organizasyonların gerçekleştirilebileceğini,

Yukarıdaki hususlar yetkilisince ifade edilmiştir.

### Helmut Jahn Sunumu:

-Münih'te açık alanlarda yılda 450 adet organizasyon gerçekleştirildiğini,

-Bu organizasyonlarda önlemlerin direk kaynakta alınarak sonra alınacak birçok tedbirin azalmasına yardımcı olduğunu,

-Mesela; Marian Plautz meydanında gerçekleştirilen bir organizasyona 8.000 kişinin katıldığını ve 13 kutlama çadırının kurulduğunu,

-Çadırlarda müzik sistemleri için ses seviye ölçer cihazlar kurulup bunların sık sık kontrolünün yapıldığını,

-Ayrıca çadırlarda seslerin dağıtıldığını (hoperlörleri ayrı yerlere koyarak)

-Onaysız olan ses sistemlerinin direk mühürlendiğini,

-Organizasyonların hergün 23.00'da sona erdirildiğini,

-Organizasyon dışında kalan bir noktanın referans noktası olarak seçildiğini ve ortalama ses seviyesinin buna göre belirlendiği, bunun bir danışmanlık firmasınınca yapıldığını ve sonucun konser bitiminde raporla kurumlarına sunulduğunu,



Yukarıdaki hususlar yetkilisince ifade edilmiştir.

### **Silvia Hecker Sunumu:**

-2007 yılında kurumlarına 417 başvuru yapıldığını,

-Bunlardan yalnız 212 sinin başvurusunun olumlu sonuçlandığını,

-Çok başvuru geldiğinden kurumlarında koordinasyon masasının oluşturulduğunu,böylece organizatörlerle birebir uyum içinde çalışıldığını,

-Sabah 3'e kadar arka plan gürültü seviyesinin(5 dBA) aşılması için kurumlarının gerekli tedbirleri aldığını,

Yukarıdaki hususlar yetkilisince ifade edilmiştir.

### **Uwe Jende Sunumu:**

-Duserdorf'ta 600.000 nüfus ve 3500 adet eğlence yerinin olduğunu,

-3500 adet eğlence yerinden her yıl ortalama 300 adet şikayet geldiğini fakat yıllar geçtikçe bu şikayetlerde azalma olduğunu ve gelen 300 şikayetin 250'sinin sadece gürültü ile ilgili olduğunu,

-Burada da belediyeye bağlı zabıtalının şikayetlere baktığını ve bu konuyla ilgili eğitimler aldığını,

-Eğlence yeri açacak kişi yada kişilerin aşağıdaki özellikleri taşıması gerektiğini,

a)Mahkemelerle herhangi bir ilişkisinin olmaması

b)Esnaf ve sanatkarlar odasından hijyene yönelik belge alması

c)Alkollü ya da kavgaya karışmışsa kesinlikle içkili yer ruhsatının verilmediğini,

d)Başvuru esnasında mevcut yerde ne tür faaliyet yapacağını açıkça belirtmeli ki;bizde kurum olarak kendisine ne tür önlemleri almasının zorunlu olduğunu belirtelim

-İşletmeye ruhsat verildikten sonra işletme etrafındaki insanları rahatsız etmeyecek şekilde çalışacağına dair bilirkişi raporunda alındıktan sonra ruhsatı verdiklerini,

-Ayrıca yönetmelikteki tedbirler yeterli olmadığı takdirde ek hükümlerin devreye sokulduğunu, bu maddeye örnek olarak;

-Bir tarihi yapının altında disko açmak için için gelen müracaatta,ekiplerinin giderek ölçüm aldığını,tarihi yapı olması nedeni ile izolasyona gerek kalmadığı görülmüş olup kurumlarınca bu yere ruhsat verildiğini ancak bu yer zamanla o kadar çok rağbet

görmüş ki; gelen insanlar yapı küçük olduğundan ister istemez mekan dışında da eğlenmek zorunda kaldıklarını, bunun sonucunda çevreden çok şikayet geldiğini, bu sebeple kendilerinin işletmeye ek hüküm getirerek çalışma saatlerini sınırladıklarını ancak işletme sahibinin çok ünlü biri olması nedeniyle getirilen bu ek hükme uymadığını, mahkeme neticesinde belediyelerinin haklı bulunduğunu ancak belediye başkanlarının kendisine olayı ağırdan almasını (ek hükmü uygulamaması) istediğini, ancak şikayetlerin çok artması nedeniyle mahkeme belediyeden kararı biran önce uygulamasını istemiş ve belediyelerinin kararı uyguladığını fakat uzman çok sancılı bir yer olduğunu hatta ek hükümde işletmenin kapanma saati olan 01:00'de olması için işletmede günlerce beklediğini ifade etmiştir.

-Bunun dışında ruhsat verilen işletmelerden daha sonra şikayet gelmesi durumunda aşağıdaki uygulamaları yaptıklarını,

a) Öncelikle izolasyon yapmalarını istediklerini

b) Restaurant kapanış saatlerini kısıtladıklarını,

c) Para cezası uyguladıklarını,

Bunlar içinde en etkili yöntemin para cezası uygulaması olduğunu, para cezası ödeme süresinin 3 gün olduğunu, bu sürede ödenmezse icra yoluna gidildiğini, icra yoluyla da ceza karşılanamazsa hapis cezası uygulandığını, ancak işletme bu duruma gelmeden sahibinin ek hükümleri uyguladığını, hapis cezası alması durumunda ise bir daha bu tarz bir iş yapmasının mümkün olmayacağını ,

Yukarıdaki hususlar yetkilisince ifade edilmiştir.

### **Antalya Temsilcisi Sunumu:**

-Gelen konuklarla Antalya'yı etüd ettiklerini, ve Antalya'da otel ve eğlence yerlerinin yan yana olması nedeniyle sorunun çözümünün çok zor olduğunu,

-Eğlencenin akşam 22:00'da başladığını ve gece 03:00'e kadar devam ettiğini,

-Özellikle Antalya'nın çok sıcak olması nedeniyle Açık hava diskolarının büyük sorun teşkil ettiğini,

Yukarıdaki hususlar yetkilisince ifade edilmiştir.

## SONUÇ;

Bu çalıştayda daha çok Almanya'da yapılan eğlence,festival,konser vb... Faaliyetler'de,faaliyet öncesi ve faaliyet sırasında alınan önlemleri her kurum kendince açıklamıştır.

Bizim ülke ile Almanya'yı karşılaştırdığımız zaman aramızda hem iklim hemde gelenek görenek olarak fark olduğundan oradaki tedbirlerin bizim için uygulanabilirliği önemlidir.Benim açımdan bizde uygulanabilirliğini düşündüğüm hususları açıklayacak olursam:

1)Almanya'da her eyaletin kendi bazında aldığı ek önlemleri.bizde MÇK'da ele alabiliriz.

2)İşletmelere saat sınırlamaları getirilmesi

3)Özellikle açık alanlarda müziğin belli bir saatte kesilerek,geç saatlerde insanların kapalı alanda eğlenmesini zorunlu hale getirilmesi,

4) İşletmelerde gürültüye karşı yönetmelik dışında ek hüküm isteyebilmek.

5)Gürültü meydana gelecek faaliyetlerde o bölgede yaşayan halkı ve organizasyonu yapan firma ile bir araya getirerek karşılıklı fikir alışverişi ve çözüm yöntemlerini bulabilmek.

Bunların yanında Almanya'da uygulanan ;

1)Faaliyetin yapıldığı bölgede meydana gelen gürültüden dolayı rahatsız olacak halkın,faaliyet boyunca tatile gönderme önerisi,

2)Faaliyetten rahatsız olacak olan bölge halkına bedava organizasyon bileti dağıtmak.

Maddeler benim açımdan oldukça ilginçti.