

## **Multidisciplinary Approach to the Implications of Generator Sound Energy on the Environment, a case Study of Onitsha**

<sup>1</sup>Okpala Uche V. and <sup>2</sup>S. U. Onwuka

<sup>1</sup>Department of Physics, Anambra State University now Chukwuemeka Odumegwu Ojukwu University, Uli

<sup>2</sup>Department of Environmental Management, Nnamdi Azikiwe University, Awka

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### **ABSTRACT**

*The effect of generator sound on the environment, a case study of Onitsha was considered in this work. 400 copies of questionnaire were randomly administered within Onitsha. The sample was chosen based on population. The issue of social implications of generator sound was discussed. The objective of this work was achieved through this hypothesis; there is no significant difference on the social implications of generator sound in Onitsha. The hypothesis was tested using analysis of variance. The result showed that there is significance difference in the social implication of generator usage in Onitsha. Since, people resort to the use of generator because of the inadequate supply of the conventional Power and generator sound affects environment; it was recommended that government should ensure adequate supply of the conventional power. To ensure proper protection of the environment and economic growth, the study also recommended that governments adopts better strategies through ensuring regular supply of conventional power and the provision of silencer generators for use by the common man.*

**Key words:** Onitsha, Generator, Sound Energy.

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### **INTRODUCTION**

The environment consist of natural and manmade or built environment. The natural environment involves all living and non-living things existing naturally on the earth surface. It houses the interactions of all living things, climate, weather, natural activities that affect life and economic activities [1]. Manmade or built environment involves that area where man has greatly modified in the cause of development, industrialization and urbanization etc. [2]. Symons (1997). It is this environment that human activities affect through the use of fossil fuel, generator sound and other activities. Sound is a mechanical wave that is an oscillation of pressure transmitted through a solid, liquid, or gas, composed of frequencies within the range of hearing [3]. It is a form of energy associated with the vibration of matter [4]. Sound is a sensory perception evolved by physiological processes in the auditory nerve of the brain. The complex pattern of sound wave is perceptually classified as "Gestalis" and is labeled as noise, music, and speech etc. [5]. Often times, it is not possible to distinguish noise from sound, it is dependent on the perception of the individual listener. What may be considered as music to one person may be noise to another. Noise is a form of sound wave. It is defined as unwanted sound or unpleasant sensation. Sound wave is measured in decibel. The human hearing range is 20Hz-2000Hz, anything above this is a nuisance (noise). Noise may not be as harmful as the contamination of air or water but it is a pollution problem that affects human health and can contribute to a general deterioration of the environmental quality. It can cause a variety of problems ranging from social disorder to health. Noise pollution can cause annoyance, aggression, hypertension, high stress levels, tinnitus, hearing loss, sleep disturbances, and other harmful effects, [6, 7, 8]

Furthermore, stress and hypertension are the leading causes to health problems [8]. Chronic exposure to noise may cause noise-induced hearing loss called temporal threshold loss (TTS) and noise induced permanent threshold shift (NIPTS). There are different sources of noise pollution that contribute to both indoor and outdoor noise pollution. Noise from factories, vehicles, generators and playing of loud speakers during festive season contribute to outdoor noise pollution while loudly played radio or music systems and other electronic gadgets within living compartments contribute to indoor noise pollution [5].

### 1.2 Study Area and Method of Analysis

Onitsha founded in 1550 is one of the commercial nerve centres of Nigeria with a metropolitan population of 1,003,000 million, NPC. (2006) and with a growth rate of 3.5% [9]. It is one of the fastest growing cities in Africa. Onitsha is the strategic trade way between the former eastern, western and northern States. It is located between latitudes 06°02'55"N and 06°38'34"N and on the longitudes of 06°37'30"E and 06°59'30"E. It has two local governments; Onitsha North and South. It is bounded by Anambra West/East local governments and Oyi in the North, Idemili-North/South in the East, Ogbaru local government area in the South and in the West by the River Niger [10]. Onitsha is the largest urban centre in Anambra State and major commercial town east of the Niger. Onitsha metropolitan is predominately illiterates. The housing stock is inadequate for the large population leading to the shortages and adding pressure to the rent and facilities of the existing infrastructure. This indicates the need to take proactive measure in steps to monitor the current rate of Green House Gas emission. In this study we covered four areas in Onitsha; Fegge, Woliwo Layout, In-Land town and Omoba.

### 1.3 Data Presentation

In this paper, we studied the reaction of people to generator through interviewing male and female residents in Onitsha. The essence is to maintain gender equality and to compare the male reasoning with that of their female counterparts. The results of the response to the questionnaire survey were interpreted in tabular form for easy comprehension. The analysis of the data was done using ANOVA technique so as to test the hypotheses. From the result, the calculated value (45.03) is greater than the critical value (3.49) then we reject the null hypothesis. This implies that generator sound has effect on the people.

### 1.4 Respondents That Use Sound Proof Generators

The number of respondents that use sound proof generators were studied, analyzed and represented on the table below.

**Table 1.1: Respondents that use Sound Proof Generator**

Response	Male	Female	Percentage of male	Percentage of female	Total
Yes	53	29	17	39	82
No	254	45	83	61	299
Total	307	74	100	100	381

*Source: Author's field survey (2014).*

Table 1.1, 53 respondents representing 17% of the male population said that their generator is sound proof while 254 representing 83% said that their generator is not sound proof. 29 representing 39% of the female population said their generator is sound proof and 45 representing 61% said that theirs are not sound proof.

**Table 1.2: Number of Respondents to the level of Disturbance caused by Generator usage**

Response	Male	Female	Percentage of male	Percentage of female	Total
S.A.	143	28	48	33	171
A	129	39	43	46	168
U	6	4	2	5	10
D	12	9	4	11	21
S.D.	8	4	3	5	12
Total	298	84	100	100	382

*Source: Author's field survey (2014).*

On table 1.2, 143 representing 48% of the male population strongly agree to the fact that generator causes disturbance, 129 representing 43% agrees that generator causes disturbance, 6 representing 2% neither agree nor disagree to the fact that generator causes disturbance, 12 representing 4% of the male population disagree, 8 representing 3% of the male population strongly disagree. From the female respondents, 28 representing 33%

strongly agree that generator causes disturbance, 39 representing 46% agrees that generator causes disturbance, 4 representing 5% neither agree nor disagree, 9 representing 11% of the female folk disagree that generator causes disturbance and 4 representing 5% of the female population strongly disagree to the fact that generator causes disturbance. The level of agreement in the response of male and female to the disturbance/noise level of generator usage is an indication that generator sound often times constitutes nuisance/noise and as such pollutes the environment.

**Table 1.3: Number of Respondents that responded to the fact that Generator usage causes to Quarrel among Neighbours**

Response	Male	Female	Percentage of male	Percentage of female	Total
S.A.	135	25	45	30	160
A	123	37	41	44	160
U	11	9	4	11	20
D	10	11	3	13	21
S.D.	19	2	7	2	21
Total	298	84	100	100	382

*Source: Author's field survey (2014).*

On table 1.3, 135 representing 45% of the male population strongly agree to the fact that generator causes quarrel among neighbours, 123 representing 41% agrees that generator usage makes neighbours quarrel, 11 representing 4% neither agree nor disagree to the fact that generator usage causes quarrel, 10 representing 3% of the male population disagree, 19 representing 7% of the male population strongly disagree. From the female respondents, 25 representing 30% strongly agree that generator causes quarrel, 37 representing 44% agrees that generator causes quarrel, 9 representing 11% neither agree nor disagree, 11 representing 13% of the female folk disagree that generator causes quarrel and 2 representing 2% of the female population strongly disagree to the fact that generator causes quarrel. The level of agreement in the response of male and female to the fact that generator usage causes quarrel is an indication that generator sound often times constitutes nuisance/noise and as such pollutes the environment.

**Table 1.4: Number of Respondents to the quarrel caused by the time for putting on Generator**

Response	Male	Female	Percentage of male	Percentage of female	Total
S.A.	137	37	46	44	174
A	124	24	42	29	148
U	7	6	2	7	13
D	18	11	6	13	29
S.D.	12	6	4	7	18
Total	298	84	100	100	382

*Source: Author's field survey (2014).*

On table 1.4, 137 representing 46% of the male population strongly agree to the fact that neighbours quarrel over the time for putting on generator, 124 representing 42% agree to this fact, 7 representing 2% neither agree nor disagree to the fact that neighbours quarrel over the time for putting on generator, 18 representing 6% of the male population disagree and 12 representing 4% of the male population strongly disagree. From the female respondents, 37 representing 44% strongly agree that neighbours quarrel over the time for putting on generator, 24 representing 29% agree that generator causes disturbance, 6 representing 7% neither agree nor disagree, 11 representing 13% of the female folk disagree on the fact neighbours quarrel over the time for putting on generator and 6 representing 7% of the female population strongly disagree to the fact that neighbours quarrel over the time for putting on generator. The level of agreement in the response of male and female to the quarrel stirred by the time for putting on generators is an indication that generator sound often times constitutes nuisance/noise and as such pollutes the environment.

**Table 1.5 Number of persons that respond to the fact that neighbours often quarrel over the length of hours of generator service per day**

Response	Male	Female	Percentage of male	Percentage of female	Total
S.A.	119	15	40	18	134
A	127	31	43	37	158
U	8	10	3	12	18
D	14	17	4	20	31
S.D.	30	11	10	13	41
Total	298	84	100	100	382

*Source: Author's field survey (2014).*

On table 1.5, 119 representing 40% of the male population strongly agree to the fact that neighbours quarrel over the length of hours of generator usage, 127 representing 37% agree to this fact, 8 representing 3% neither agree nor disagree to this fact, 14 representing 4% of the male population disagree and 30 representing 10% of the male population strongly disagree. From the female respondents, 15 representing 18% strongly agree that neighbours quarrel over the length of hours of generator usage, 31 representing 37% agree to this fact, 10 representing 12% neither agree nor disagree, 17 representing 20% of the female folk disagree to this fact and 11 representing 13% of the female population strongly disagree to the fact that neighbours quarrel over the length of hours of generator usage. The level of agreement in the response of male and female respondents to the fact that neighbours quarrel over the length of hours of generator usage is an indication that generator sound often times constitutes nuisance/noise and as such pollutes the environment.

### CONCLUSION AND RECOMMENDATION

The response of the people shows that generator sound causes disturbance and quarrel. The pattern of reception of the sound level of generators used by different people presents a picture of people's feeling towards the use of generator. It has been established that sound constitute noise and that noise causes pollution. From literature, it was established that noise pollution can cause annoyance, aggression, hypertension, high stress levels, tinnitus, hearing loss, sleep disturbances, and other harmful effects [6,7,8].

Furthermore, stress and hypertension are the leading causes to health problems, [8]. Chronic exposure to noise may cause noise-induced hearing loss called temporal threshold loss (TTS) and noise induced permanent threshold shift (NIPTS). It is then recommended that government makes available conventional energy so as to dissuade the people from using generator. It is also recommended that awareness drive be done to get people well informed on the dangers of generator sound to the environment so that certain level of discipline will be developed in the use of generators. Finally, government should formulate a serious law on noise pollution and devise means of enforcing it.

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