**Data Analysis Worksheet**

**Identify a source of interest** and **write a hypothesis** regarding how you expect sound levels will vary from the different measurement points.

**Plot the data** for the first data sampling as a **time series plot**. The sound measurements from each smart device most likely started and ended at different times. This difference will cause the x-axis to only report the time range for the first data selection. To remedy this, first create a scatter plot and then change the series chart type to a *line plot*. This maintains the correct x-axis values instead of scaling to the first series’ x-axis values.

1. **What can you determine from the time series plot? For example, from where is the loudest noise coming? How does the noise differ from each measurement location?**
2. **Refer to your observation sheet to determine what may have impacted the data. For example, did a bus driving by the source increase the noise level? Did the noise level increase at the other locations as well?**
3. **Is the noise level unacceptable in any location? If yes, how can you remediate?**

**Average sound exposure levels needed to reach the maximum allowable daily dose of 100%.**

|  |  |
| --- | --- |
| **Time to reach 100% noise dose** | **Exposure level per NIOSH REL** |
| 8 hours | 85 dB(A) |
| 4 hours | 88 dB(A) |
| 2 hours | 91 dB(A) |
| 60 minutes | 94 dB(A) |
| 30 minutes | 97 dB(A) |
| 15 minutes | 100 dB(A) |
| 7.5 minutes | 103 dB(A) |
| 3 minutes 45 seconds | 106 dB(A) |
| 1 minute 52 seconds | 109 dB(A) |
| 56 seconds | 112 dB(A) |
| 28 seconds | 115 dB(A) |
| 14 seconds | 118 dB(A) |
| 7 seconds | 121 dB(A) |

Note: For every 3-dB decrease in noise level, the allowable exposure time is doubled.

**Information sources:**

EPA (1974) Information on levels of environmental noise requisite to protect public health and welfare with adequate margin of safety. EPA/ONAC 550/9-74-004.
<http://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF>

NIOSH (1998) Criteria for a recommended standard: occupational noise exposure. DHHS (NIOSH) Publication #98-126. <https://www.cdc.gov/niosh/docs/98-126/>