



Benson Aluminum Dynamics

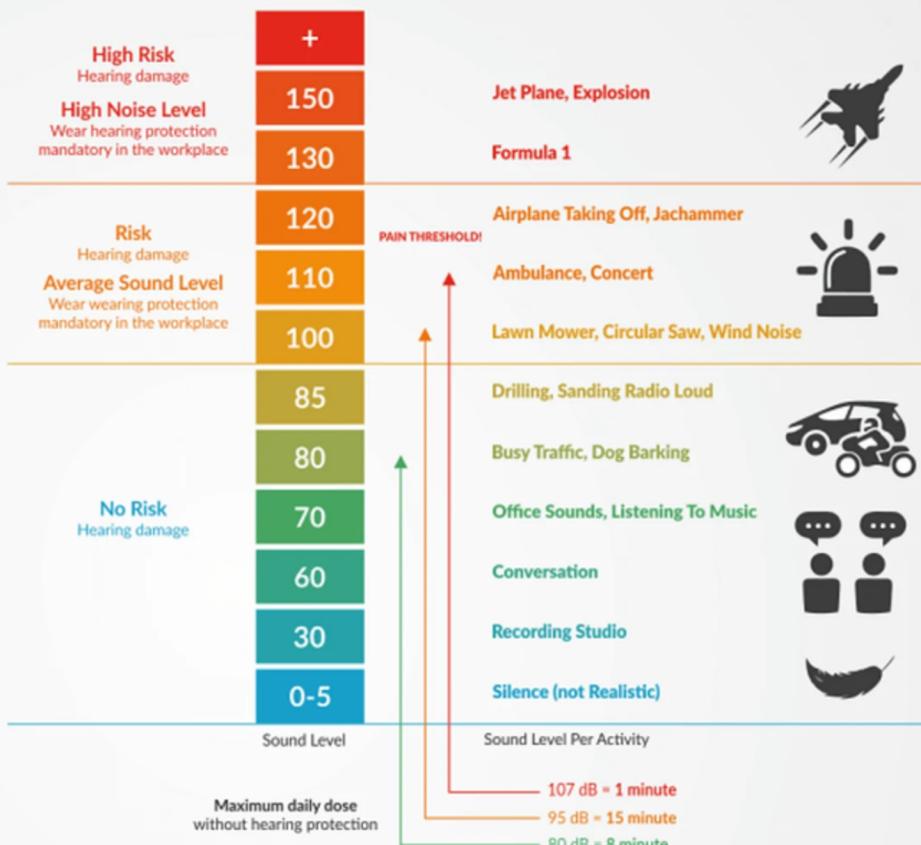
Noise Pollution from Aluminum Recycling

How Noise and Sound Impact Human Health

- By definition: **Noise** is unwanted or disturbing sound¹
- Once noise becomes persistent and increasing in levels (over **70 decibels**), severe health consequences can develop.
- These can include: hearing loss, sleep disturbance, stress, mental health, cognitive impairment¹



NOISE LEVEL DECIBEL CHART



Decibels (dB)

- Noise becomes harmful when it exceeds 70 dB and can be painful above 120 dB⁹

Sleep Disturbance

- According to Iberdrola (renewable energy company), restful sleep is impossible with nighttime ambient noise levels in excess of 30 dB⁹

Hearing Loss

- One major factor in developing hearing loss is having constant exposure to hazardous noise that's typically above 70 dB²
- Research states that over 12 million people in the U.S live near areas of outdoor noise that exceed the threshold of 70 dB continuously²

Mental Health

- Individuals exposed to long periods of noise are more likely to respond in anger, irritation, and/or emotional stress²
- Over time, the listed symptoms (above) can contribute to mental fatigue and impact work performance²



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SWEHSC (P30 ES006694) is funded by the [National Institute of Environmental Health Sciences](#)



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Noise Pollution from Aluminum Recycling

How Aluminum Recycling Machines Create Noise Pollution

- Typically, recycling centers need to have balers, hydraulic shredders, and hammer mills (heavy duty grinders).
- Research indicated that the shredder would **generate noise levels up to 82 dBA at a distance of 180-200 ft** ⁴

Top 2 Machines Used for Aluminum Recycling (According to Draft Permit from ADEQ)⁷



Industrial Melting Furnace⁶

The noise level of a melting furnace can vary widely depending on its size, type, and operating conditions. Large - scale melting furnaces, such as those used in steel mills, **can generate noise levels exceeding 90 dB**.⁵



Heavy Truck⁸

71 trucks are expected as transportation for the aluminum recycling on a daily basis.⁷ Trucks (especially heavy) can **emit noise in the range of 90-96 dB⁸**



References

- 1.“Noise Effects Handbook.” NPC Library: Noise Effects Handbook,
- 2.“Noise Control for a Metal Shredder and Recycling System”. Saxelby, L. A. (n.d.).
- 3.“What Is the Noise Level of a Melting Furnace? - Blog.” Zibo Jimeng Environmental Protection Equipment Co.. Ltd.
- 4.“Products-Melting Furnace.” Hertwich.
- 5.AQD | Aluminum Dynamics, inc. | adeq. Arizona Department of Environmental Quality. (n.d.).
- 6.“Noise pollution: By the decibels: Clean charge network.” Plug-In KC + Clean Charge Network.



Shredder System⁴

Measurements taken for a 2012 study conducted showed that a 60-inch-by-60-inch shredder with a 1,000-horsepower electric motor created noise **levels of up to 123 dB⁴**