

## **A scoping review of freight rail noise and vibration impacts on domestic animal health and welfare**

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### **Abstract**

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*Multiple benefits of freight rail activity have been shown for commercial agribusiness, yet the effects of freight rail-related noise and vibration on domestic livestock health and welfare has so far received little research attention. This scoping review examines peer-reviewed and grey literature addressing associations between freight rail noise, vibration and impacts on domestic livestock. Six databases (Scopus, Science Direct, SAGE, TRID, SPARK, ARRB) were searched for relevant literature published from 1980–2019. PRISMA search procedures were used to identify 28 publications relevant to domestic livestock, as well as noise or vibration impact of rail applicable to the freight rail context. Included publications addressed a range of livestock and related species, covering descriptive, review, and experimental findings on noise and vibration impacts. Five publications addressed vibration effects, and 23 addressed noise effects. Effects of noise and vibration on different species indicated that adverse effects vary depending on exposure intensity. The literature indicates that specific thresholds for noise and vibration exposure should be considered when managing freight rail impacts on commercial agribusiness involving avian and mammalian species. Freight rail noise and vibration likely exceeds thresholds for discomfort and harm for avian and mammalian species. Future research should consider case studies that specifically focus on integrating freight rail noise and vibration data to derive species-specific guides for animal health and welfare purposes.*

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