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COMPREHENSIVE ASSESSMENT AND DRIVING FACTORS OF ACOUSTIC ENVIRONMENT QUALITY IN HANYUAN COUNTY, CHINA (2019-2023)

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Abstract

The fuzzy comprehensive evaluation method was applied to assess the current status of the acoustic environment quality in the urban area of Hanyuan County center in 2019-2023. The results show that the overall level of regional acoustic environment quality in the urban area of Hanyuan County center is at Level II (good) in 2019 and Level III (general) in 2020-2023. The traffic noise level is at Level II (good) during the daytime in 2021 and Level I (quiet) during the rest of the study period. Through the evaluation of regional noise and the exploration of the gray correlation between its influencing factors, the most significant factor affecting the quality of the acoustic environment is the annual per capita disposable income of urban residents, followed by the output value realized by industrial enterprises above the designated size and the annual realization of the gross regional product. With regard to the influencing factors of traffic noise, this paper uses Spearman's rank correlation statistics to calculate the correlation coefficients of various factors affecting the quality of urban traffic noise, and carries out the significance judgment and correlation grading. The results of correlation analysis show that the industrial electricity consumption and the annual completed freight volume are among the main factors affecting the urban traffic noise, and the number of heavy vehicles passing through the road during the daytime is strongly correlated with the traffic noise in the city.

Key words: acoustic environment quality, noise impact, noise pollution, traffic noise, urban noise

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