

李晓玲,吴焯,姚欣灿,张少君,周昱,傅立新.广州市实施I/M简易瞬态工况检测方法的环境效果分析[J].环境科学学报,2012,32(1):101-108

广州市实施I/M简易瞬态工况检测方法的环境效果分析

Evaluation of the environmental benefits of the enhanced vehicle inspection/maintenance program based on the short transient loaded mode in Guangzhou

关键词: [检查/维护\(I/M\)](#) [轻型汽油车](#) [简易瞬态工况法](#) [排放](#) [MOBILE5模型](#)

基金项目: [国家高技术研究发展计划\(No.2009AA06Z304\)](#)

作者 单位

李晓玲 清华大学环境学院,北京 100084

吴焯 清华大学环境学院,北京 100084

姚欣灿 广州市环境监测中心站,广州 510030

张少君 清华大学环境学院,北京 100084

周昱 清华大学环境学院,北京 100084

傅立新 清华大学环境学院,北京 100084

摘要: 采用简易瞬态工况法对在用车进行检测,能够更为有效地筛选高排放车辆.2007—2009年广州市轻型汽油车的简易瞬态工况法的初检数据表明,国I排放标准实施以前(简称“国I前”)车辆和国I及以后排放标准车辆排放超限值比例分别为20.1%和17.6%.简易瞬态工况法复检数据得到的国I前和国I及以后车辆经维护后能够达标的比例分别为76.0%和64.7%,且经过有效维护后超标车辆的平均排放水平有较大比例的削减.同时,采用修正的MOBILE5模型对广州市轻型汽油车排放进行模拟.结果发现,广州市2009年轻型汽油车的CO、HC和NO_x排放量分别为24.4×10⁴、3.8×10⁴和1.8×10⁴t.如果考虑I/M制度实施及实际执行率,复检不达标车辆在全淘汰情景下,2009年广州市轻型汽油车排放的CO、HC和NO_x分别能削减4.20×10⁴、0.58×10⁴和0.15×10⁴t,占全部轻型汽油车的削减比例分别为17.2%、15.3%和8.2%;而在全部置换为国IV新车情景下,3种污染物分别能削减4.12×10⁴、0.57×10⁴和0.14×10⁴t,削减比例分别为16.9%、15.0%和8.0%.国I前及国I车辆对CO和HC削减量的贡献达到90%左右,对NO_x削减量的贡献也在85%左右.

Abstract: The short transient loaded mode (IG195) test can improve the efficiency of identifying high emitters in inspection/maintenance (I/M) programs. This paper was based on the pilot IG195 test data of light-duty gasoline vehicles (LDGV) in Guangzhou from 2007 to 2009. The percentages of high emitters exceeding the cut points for pre- and post-Euro I (including Euro I) vehicles were 20.1% and 17.6%, respectively. Re-inspection test data showed that 76.0% pre-Euro I and 64.7% post-Euro I high emitters could meet the requirement after proper maintenance. The modified MOBILE5 model was used to estimate the emission factors for LDGV. In 2009, the LDGV in Guangzhou emitted 244 thousand tons of CO, 38 thousand tons of HC and 18 thousand tons of NO_x. If all of the vehicles which finally failed the IG195 test could be scrapped, the emissions of CO, HC and NO_x can be reduced by 42.0 thousand tons, 5.8 thousand tons and 1.5 thousand tons, respectively, which amount to 17.2%, 15.3% and 8.2% of the total LDGV emissions. If all of the vehicles finally failing IG195 could be replaced by Euro IV models that complied with their emission standards, the emissions of CO, HC and NO_x could be reduced by 41.2 thousand tons, 5.7 thousand tons and 1.4 thousand tons, which made up 16.9%, 15.0% and 8.0% of the total LDGV emissions, respectively. Controlling the pre-Euro I and Euro I vehicles was the most effective way in achieving emission reduction benefits by the new I/M program. The two vehicle categories together contributed about 90% of the emission reduction for CO and HC, and 85% for NO_x in the I/M program.

Key words: [inspection and maintenance\(I/M\)](#) [light-duty gasoline vehicles](#) [short transient loaded mode \(IG195\)](#) [vehicle emission](#) [MOBILE5 model](#)

摘要点击次数: 775 全文下载次数: 726

关闭

下载PDF阅读器

您是第3670915位访问者

主办单位：中国科学院生态环境研究中心

单位地址：北京市海淀区双清路18号 邮编：100085

服务热线：010-62941073 传真：010-62941073 Email: hjkxxb@rcees.ac.cn

本系统由北京勤云科技发展有限公司设计