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Risk Assessment and Air Quality Study during Different Phases of COVID-19 Lockdown in an Urban Area of Klang Valley, Malaysia

Mohd Shahrul Mohd Nadzir [1,2,*], Mohd Zaim Mohd Nor [3], Mohd Fadzil Firdzaus Mohd Nor [4], Muhamad Ikram A Wahab [5], Sawal Hamid Md Ali [6], Muhsin Kolapo Otuyo [1], Mohd Aftar Abu Bakar [7], Lip Huat Saw [8], Shubhankar Majumdar [9], Maggie Chel Gee Ooi [10], Faizal Mohamed [11], Badrul Akmal Hisham [12], Haris Hafizal Abd Hamid [1], Zaki Khaslan [1], Noratiqah Mohd Ariff [7], Johary Anuar [13], Gee Ren Tok [1], Nurul Asyikin Ya'akop [1] and Mai'izzati Mohd Meswan [1]

1 Department of Earth Sciences and Environment, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, Bangi 43600, Selangor, Malaysia; p108956@siswa.ukm.edu.my (M.K.O.); haris@ukm.edu.my (H.H.A.H.); zakikhaslan@gmail.com (Z.K.); a166085@siswa.ukm.edu.my (G.R.T.); syikinyaakop1@gmail.com (N.A.Y.); a163628@siswa.ukm.edu.my (M.M.M.)
2 Centre for Tropical System and Climate Change (IKLIM), Institute of Climate Change, Universiti Kebangsaan Malaysia, Bangi 43600, Selangor, Malaysia
3 Petaling Jaya City Council, Jalan Yong Shook Lin, Petaling Jaya 46675, Selangor, Malaysia; mohdzaim@mbpj.gov.my
4 Institute of Ocean & Earth Sciences, C308 IAS Building, University Malaya, Kuala Lumpur 50603, Malaysia; fadzil.mnor@um.edu.my
5 Environmental Health and Industrial Safety Program, Faculty of Health Sciences, School of Diagnostic Science and Applied Health, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur 50300, Malaysia; ikram@ukm.edu.my
6 Department of Electrical, Electronic and Systems Engineering, Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia, Bangi 43600, Selangor, Malaysia; sawal@ukm.edu.my
7 Department of Mathematical Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, Bangi 43600, Selangor, Malaysia; aftar@ukm.edu.my (M.A.A.B.); tqah@ukm.edu.my (N.M.A.)
8 Lee Kong Chian, Faculty of Engineering and Science, Universiti Tunku Abdul Rahman, Kajang 43000, Selangor, Malaysia; sawlh@utar.edu.my
9 Department of Electronics and Communication Engineering, National Institute of Technology Meghalaya, Shillong 793003, India; shub@nitm.ac.in
10 Earth Observatory Center, Institute of Climate Change, Universiti Kebangsaan Malaysia, Bangi 43600, Selangor, Malaysia; chelgee.ooi@ukm.edu.my
11 Faculty of Science and Technology, School of Applied Physics, Universiti Kebangsaan Malaysia, Bangi 43600, Selangor, Malaysia; faizalm@ukm.edu.my
12 Department of Orthopedics & Traumatology, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Yaacob Latif, Bandar Tun Razak, Cheras, Kuala Lumpur 56000, Malaysia; badortho@gmail.com
13 Petaling District and Land Office Complex Shah, Shah Alam 40150, Selangor, Malaysia; johary@selangor.gov.my
* Correspondence: shahrulnadzir@ukm.edu.my

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Abstract: Globally, the COVID-19 pandemic has had both positive and negative impacts on humans and the environment. In general, a positive impact can be seen on the environment, especially in regard to air quality. This positive impact on air quality around the world is a result of movement control orders (MCO) or lockdowns, which were carried out to reduce the cases of COVID-19 around the world. Nevertheless, data on the effects on air quality both during and post lockdown at local scales are still sparse. Here, we investigate changes in air quality during normal days, the MCOs (MCO 1, 2 and 3) and post MCOs, namely the Conditional Movement Control Order (CMCO) and the Recovery Movement Control Order (RMCO) in the Klang Valley region. In this study, we used the air sensor network *AiRBOXSense* that measures carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2) and particulate matter ($PM_{2.5}$ and PM_{10}) at Petaling Jaya South (PJS), Kelana Jaya (KJ) and Kota Damansara (KD). The results showed that the daily average concentrations of CO and NO_2 mostly decreased in the order of normal days > MCO (MCO 1, 2 and 3) > CMCO > RMCO. PM_{10}, $PM_{2.5}$, SO_2 and O_3 showed a decrease from the MCO to RMCO. PJS showed that air pollutant