Analysis kualitas udara mikrobiologis parameter bakteri di dalam lift gedung kuliah bersama: studi kasus: gedung perkuliahan Fakultas Teknik Univeristas Indonesia = Analysis of microbiological air quality with bacteria and parameter in the college building elevators: case study: college building at Faculty of Engineering, University of Indonesia

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Abstrak

Kualitas udara mikrobiologis di dalam lift gedung perlu diperhatikan karena sebagian besar orang lebih memilih untuk menggunakan lift daripada tangga. Banyaknya orang berlalu-lalang memungkinkan mikroorganisme untuk masuk dan mengalami pertumbuhan pada lingkungan yang ideal di dalam lift. Studi literatur mengenai keberadaan bioaerosol di dalam lift masih tergolong sedikit. Oleh sebab itu, penelitian kualitas udara mikrobiologis penting dilakukan di salah satu ruangan pada lingkungan kampus, yaitu lift gedung kuliah saat masa libur dan aktif perkuliahan. Penelitian ini dilakukan di lift pada Gedung S, K dan EC di Fakultas Teknik Universitas Indonesia dengan tujuan untuk mengetahui serta membandingkan hasil konsentrasi bakteri pada masa libur dan aktif perkuliahan, menganalisis pengaruh faktor lingkungan dan potensi sumber pencemar mikrobiologis potensial di sekitar lift gedung perkuliahan. Metode pengambilan sampel pasif digunakan untuk mengambil sampel udara selama 15 menit agar bakteri terdeposisi secara alami ke media Tryptone Soya Agar. Pengambilan sampel permukaan dengan dry swab dilakukan untuk mengetahui apakah tombol panel lift termasuk ke dalam salah satu sumber pencemar mikrobiologis potensial. Dari hasil penelitian dapat diketahui konsentrasi bakteri pada ketiga lift gedung tidak memenuhi baku mutu, yaitu 500 CFU/m3 dan 700 CFU/m3. Pada masa libur, konsentrasi tertinggi sebesar 1.330 CFU/m3 terdapat di lift Gedung EC dan terendah sebesar 608 CFU/m3 terdapat di lift Gedung S. Sedangkan pada masa aktif, konsentrasi tertinggi sebesar 2.084 CFU/m3 terdapat di lift Gedung S dan terendah sebesar 1.081 CFU/m3 terdapat di lift Gedung K. Hasil uji komparatif menunjukkan bahwa hanya lift Gedung S yang memiliki perbedaan konsentrasi bakteri pada kedua masa perkuliahan. Uji korelasi antara konsentrasi bakteri dengan faktor lingkungan bervariasi tergantung pada kondisi cuaca selama pengambilan sampel. Hanya kecepatan angin yang tidak mempengaruhi karena menyebabkan tidak adanya dispersi mikroorganisme. Sumber indoor bioaerosol seperti keberadaan manusia sebagai pengguna lift sangat berpengaruh sangat kuat terhadap konsentrasi bakteri di dalam lift gedung. Perlu dilakukan pemeliharaan kebersihan secara rutin terhadap pendingin ruangan beserta filter, tombol panel lift, serta lingkungan di sekitar lift gedung agar dapat menurunkan konsentrasi bakteri.

.....Microbiological air quality in the building elevator needs to be considered because most people prefer to use elevators rather than stairs. The number of people passing by allows microorganisms to enter and grow in the ideal environment of elevator. Literature studies regarding the presence of bioaerosol in elevators are still relatively small. Therefore, microbiological air quality research is important in one of the rooms on the campus environment, the college building elevator during holidays and active periods of lectures. This research was carried out in the elevators of the S, K and EC Buildings at the Faculty of Engineering, University of Indonesia with the air of knowing and comparing the results of bacterial concentration during

holidays and active periods of lectures, analyzing the influence of environmental factors and potential sources of potential microbiological pollutants around elevators. The passive sampling method is used to take air samples for 15 minutes so that bacteria are naturally deposited into the Tryptone Soya Agar medium. The surface samples taken by dry swab is done to find out whether the elevator panel button is included in one of the potential microbiological pollutant sources. From the results of research, it can be seen that bacterial concentrations in the three building elevators did not meet the quality standards, 500 CFU/m3 and 700 CFU/m3. During the holidays, the highest concentration of 1.330 CFU/m3 is found in the EC Building elevator and the lowest is 608 CFU/m3 in the S Building. While the active period, the highest concentrations of 2.084 CFU/m3 is found in the S building elevator and the lowest is 1.081 CFU/m3 in the K Building elevator. The comparative test results show that only the S Building elevator has a difference in bacterial concentration in the two lecture periods. Correlation test between bacterial concentration and environmental factors varies depending on weather conditions during sampling Only the wind speed does not affect because it causes no dispersion of microorganisms. Indoor bioaerosol sources such as the presence of humans as elevator users have a very strong influence on the concentration of bacteria in the building elevator. Routine hygiene maintenance needs to be done on air conditioners along with filters, elevator panel buttons, and the environment around the building elevators to reduce the concentration of bacteria.