I. INTRODUCTION

The development of technology has cover almost all sector in our live sometimes individuals forgetting important things for themselves, one of which is their health, The health of an individual greatly affects the results of their labor. By being in a good work environment will avoid the risk of an individual falling sick, one of the indicators for a good working environment is the air quality that good and convenient for a person to inhale. Air has some key pollutants that are not good for us to breathe. Example pollutants that are often heard are carbon monoxide (CO), Nitrogen dioxide (NO2), chlorofluorocarbons (CFCs). This element that we usually hear about in pollution air but there is still a lot of air pollution according to Government Regulations Republic of Indonesia No. 41 of 1999 is the entry or inclusion of substances, energy, and/or other components into ambient air (environment) by activities human beings, so that ambient quality drops to a certain level which causes ambient air cannot fulfill its function Therefore, the solution we can do is to look for a working environment which is good by doing forecasting of air quality. This is expected by many individuals who are spared from air pollution to the point of getting sick.

There have been many studies related to analyze air quality index, several previous studies have conducted research on building fuzzy logic methods to determine the value of the air quality index and compared it with the air quality index value owned by the government [1]. The researchers used many methods to forecast air quality index, such as FTS chen model and ARIMA much utilized in research, ARIMA is one of the most traditional methods of non-stationary time series analysis. In contrast to the regression models, the ARIMA model allows time series to be explained by its past or lagged values and stochastic error terms. The models developed by this approach are usually called ARIMA models because they use a combination of autoregressive (AR), integration (I) - referring to the reverse process of differencing to produce the forecast and moving average (MA) operations [2]. FTS chen model simplifies arithmetic operations at the stage formation of fuzzy relations so that this model has easier calculations and time it takes to calculate more fast.[3]

This research uses the Cyber-Physical System (CPS) approach to forecast the air quality index because CPS is made up for computers interact to each other by analyzing with the real world with the help of sensors, actuators, and a response loop in realtime [4]. To compare between two methods ARIMA and fuzzy time series chen model to see which one has better accuracy for forecast. The researcher can prove ARIMA could give better accuracy than other modeling techniques like ANFIS [5]. Some studies have even used microcontrollers so that parameter data for the air quality index is more accurate and can be monitored directly [6][7].

Therefore, from this research, the result can be used and provided as a reference for further time series forecasting air quality index to have better accuracy in prediction. Because air quality is one crucial factor among other factor that has impact in our activities [8]. The context in this research is to make people care about the ecosystem environment for the sake of human life and living things in the future with help of cyber-physical system to forecast air quality index for a better environment.