Opioid addiction was declared a public health crisis by the US Department of Health and Human Services in 2017 and continues to be a problem in our society today. In mathematics, addiction is often modeled under an infectious disease framework, where it is viewed as a social disease. This means the development of a substance-use disorder is assumed to be caused by social spread. However, addiction is more complicated than infectious disease in that it can develop in individuals with or without social interaction influencing addictive behaviors. To address this, we will first discuss simple disease models (including the SIS and SIR ordinary differential equation models) and how we can extend these disease models to model the development of addiction by including both contact and non-contact addiction rates. We will then introduce optimal control as means of model analysis, with the goal of minimizing the amount of addiction in a population over time. Lastly, we will discuss ideas for how to generalize these techniques of optimal control to more complicated models of addiction, including the SPAR (Susceptible-Prescribed-Addicted-Recovered) model of opioid addiction.