1. Randomly choose ( in this study) parameter sets from to be used as the starting sample () in the parallel Markov chains.
2. Apply the following Metropolis-Hastings algorithm [57] with parallel Markov chains:
3. Generate a candidate sample at the sampling iteration () for the chain (). The (, is the number of parameters) element of is generated as

where denotes a normal distribution with mean and variance . At the beginning, is determined as the standard deviation of the corresponding parameter values in . Later, it will be tuned based on the acceptance rate (see below). At each step, verify whether all the parameter constraints are fulfilled. If not all the parameter constraints are fulfilled, regenerate a candidate sample until all the parameter constraints are fulfilled.

1. Run the model with each candidate sample () and evaluate the number of process constraints satisfied ().
2. If , accept the candidate samples as the next sample, i.e., . Otherwise, keep the current sample as the next sample, i.e., .
3. Set and repeat 8a to c until termination of the Markov chain (see below).