CLAIMS

What is claimed is:

1. A system for controlling a hygiene device configured to be affixed to a food delivery box to conduct hygiene cycles each including spray of a hygiene agent into the box and to record information related to performance of the hygiene cycles, the hygiene device configured to communicate with a provider's network, the system comprising:

a mobile device configured to be communicatively coupled to the hygiene device via a first wireless communication link, to transmit commands controlling the conduction of the hygiene cycles to the hygiene device via the first wireless communication link, to receive the recorded information transmitted from the hygiene device via the first wireless communication link, and to detect a failure in following a hygiene procedure for ensuring food safety using the received recorded information.

2. The system according to claim 1, wherein the mobile device is configured to transmit at least one of a command for starting a hygiene cycle of the hygiene cycles, a command for controlling timing of the spray of the hygiene agent during the started hygiene cycle, a time, or a software upgrade to the hygiene device via the first wireless communication link.

3. The system according to claim 2, wherein the mobile device is configured to receive the command for starting the hygiene cycle from the user.

4. The system according to claim 2, wherein the mobile device is configured to generate the command for starting the hygiene cycle automatically.

5. The system according to any of claims 2 to 4, wherein the mobile device is configured to receive at least one of a status of the started hygiene cycle, a battery level of the hygiene device, or an indication of whether the box is open from the hygiene device via the first wireless communication link.

6. The system according to claim 5, wherein the mobile device is configured to be communicatively coupled to the provider's network via a second wireless communication link and to transmit at least one of the battery level of the hygiene device, the indication of whether the box is open, or data related to performance of the each hygiene cycle to the provider's network via the second wireless communication link.

7. The system according to claim 6, wherein the mobile device is configured to receive at least one of a reminder for starting a hygiene cycle of the hygiene cycles, the command for controlling timing of the spray of the started hygiene agent, the time, or the software upgrade from the provider's network via the second wireless communication link.

8. The system according to claim 7, wherein the mobile device is configured to present at least one of the reminder for starting the hygiene cycle, the status of the each hygiene cycle, the battery level of hygiene device, or the indication of whether the box is open to the user.

9. The system according to any of the preceding claims, wherein the mobile device comprises a smartphone.

10. A non-transitory machine-readable storage medium including instructions, which when executed by a machine, cause the machine to perform a method comprising:

initiating hygiene cycles each including spray of a hygiene agent into a portable food delivery box using a hygiene cycle schedule and a food ordering and delivery status;

transmitting a cycle start command to a portable hygiene device via a first wireless communication link, the hygiene device affixed to the food delivery box and configured to conduct the hygiene cycles and to record information related to performance of the hygiene cycles, the cycle start command starting a hygiene cycle of the hygiene cycles; and

receiving the recorded information from the hygiene device via the first wireless communications link, the recorded information including at least one of a

spray status of the started hygiene cycle, a device identification identifying the box, a time stamp of the started hygiene cycle, a pumping time during which the hygiene agent is pumped to spray, a battery level of the hygiene device, or a lid open alarm indicating that a lid of the hygiene device is open.

11. The non-transitory machine-readable medium according to claim 10, where the method further comprises transmitting at least portions of the received recorded information to a provider's network via a second wireless communication link.

12. The non-transitory machine-readable medium according to claim 11, wherein the method further comprises:

receiving a current universal time coordinated (UTC) from the provider's network via the second wireless communication link; and

transmitting the received UTC to the hygiene device.

13. The non-transitory machine-readable medium according to any of claims 11 and 12, wherein the method further comprises updating the pumping time in the hygiene device.

14. The non-transitory machine-readable medium according to claim 13, wherein the method further comprises updating the pumping time in the hygiene device to a new pumping time in the provider's network when the pumping time in the hygiene device differs from the new pumping time in the provider's network.

15. The non-transitory machine-readable medium according to any of claims 11 to 14, wherein the method further comprises:

checking the provider's network for a software update for the hygiene device;

receiving a software package for updating the instructions when the software update is available; and

updating the instructions using the received software package.

16. The non-transitory machine-readable medium according to any of claims 11 to 15, wherein the method further comprises:

detecting an error in data transmission via the first wireless communication link or in operation of the hygiene device; and

transmitting an error indication to the provider's network in response to a detection of the error, the error indication indicative of a type of the detected error.

17. The non-transitory machine-readable medium according to any of claims 11 to 16, wherein the method further comprises:

identifying the hygiene device from a plurality of devices based on an identification of the hygiene device; and

locking down connection with the hygiene device via the first wireless communication link in response to the hygiene device being identified to ensure completion of data transmission to and from the hygiene device.

18. The non-transitory machine-readable medium according to any of claims 11 to 17, wherein the method further comprises transmitting a stop command to the hygiene device to cause an immediate stop of the spray of the hygiene agent into the box.

19. The non-transitory machine-readable medium according to claim 18, wherein the method further comprises:

receiving a stop indication of whether the spray has been stopped; and

repeating the transmitting of the stop command and receiving the stop indication until the received indication indicates that the spray has been stopped or until the pumping time ends.

20. The non-transitory machine-readable medium according to any of claims 11 to 19, wherein the method further comprises:

receiving the hygiene cycle schedule from the provider's network; and

generating a cycle start reminder for starting a next hygiene cycle of the hygiene cycles.