Monitoring Hand Cleanliness Using systemSURE II™ ATP Hygiene System

The importance of hand washing is a well-known fact. Reports indicate that inadequately washed hands are a factor in up to 40% of food-related outbreaks of illness. The low compliance rate (30-40% for Foodservice operators) is probably due to the lack of a rapid and simple method to assess whether effective hand washing has occurred, even if operators have been fully trained in correct hand-washing procedures.

Hygiene Monitoring based on ATP (adenosine tri-phosphate) bioluminescence is a simple method that can be used as part of a hand-washing monitoring program to obtain results in real time. ATP is the universal energy molecule found in all living cells. The combination of ATP with the enzyme luciferase produces light that can be measured in a luminometer. The amount of light is proportional to the amount of ATP and is expressed in Relative Light Units (RLUs). The greater the level of ATP, the higher the RLU value, the dirtier the hand. Measurement of ATP can be used: a.) during induction training to show the effectiveness of good hand-washing technique and b.) to monitor efficacy of hand washing by swabbing clean hands ***immediately*** after washing (before hands come into contact with anything).

Our validation data suggests that a reduction in ATP levels of greater than 75% is achievable following effective hand washing (requires two samples, one before and one after cleaning -- *data not shown*). For routine monitoring, Hygiena wanted to set a single Pass/Fail limit that would only require a single swabbing device per employee. Company employees washed their hands with soap and water for approximately 20 seconds and dried them with paper towels. The palm of the dominant* hand was swabbed using Ultrasnap™ and the devices measured in the systemSURE II luminometer.

A Pass/Fail limit of 60 RLU was used. If the result was higher than 60 RLU, the volunteer was asked to rewash his/her hands for retesting.

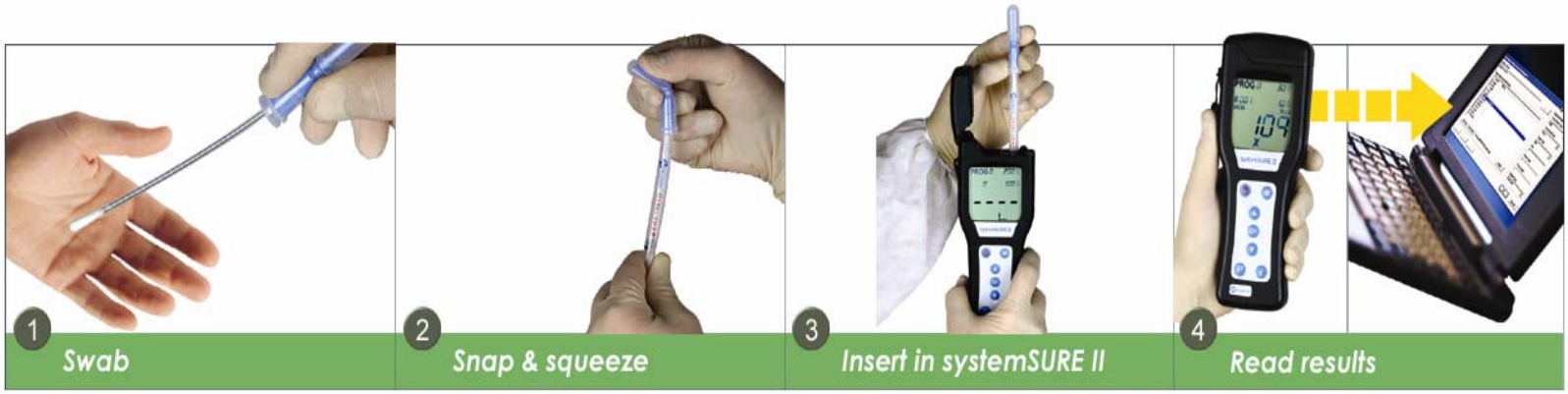

Table 1. Routine monitoring of the ATP levels on employees hands immediately post washing.

Volunteer	RLU Result	Action Yes/No	Retest RLU
1	7	No	-
2	18	No	-
3	23	No	-
4	21	No	-
5	**245**	**Yes**	**61**[a]
6	19	No	-
7	23	No	-
8	50	No	-
9	24	No	-
10	15	No	-
11	24	No	-
12	**130**	**Yes**	**81**[a]
13	28	No	-
14	16	No	-
15	30	No	-
16	20	No	-
17	36	No	-
18	34	No	-
19	**72**	**Yes**	15
20	27	No	-
21	25	No	-
22	**112**	**Yes**	14
23	53	No	-
24	**88**	**Yes**	21
25	29	No	-

Hand-Washing Procedure

It is a published fact that people tend to wash their hands in such a way that soiling and transient microorganisms are not removed from all areas of the hands equally.
Hands should be washed frequently and thoroughly throughout the workday, especially after they have been exposed to sources of contamination. Proper hand-washing technique includes:

- *Use warm water, sufficient amounts of soap/cleanser, and wash for 20-30 seconds*
- *Wash up to the forearms*
- *Use a nail brush to clean under fingernails*
- *Rinse with hands opened down into the sink*
- *Dry hands and arms thoroughly*
- *Use the paper towel to turn off the water and discard*

Wash Hands After

- *Blowing the nose*
- *Coughing/sneezing*
- *Restroom and coffee breaks*
- *Personal grooming*
- *Smoking*
- *Touching unsanitary surface*

For more information visit: www.hygienaUSA.com