Uniform Clean Surface Standard

The British Standards Institute (BSI), the oldest national standards body in the world, defines a standard as "an agreed, repeatable way of doing something. It is a published document that contains a technical specification or other precise criteria designed to be used consistently as a rule, guideline, or definition."¹

Cleaning Contract Compliance Consultants (Lynn E. Krafft) has developed the Uniform Clean Surface Standard to meet that definition.

A Clean Surface Standard should enable two different parties to develop common expectations based on precisely defined terms and concepts that relate to surface cleaning. Few documents exist that provide criteria for judging the reliability and effectiveness of a cleaning procedure. Those that do, such as the July 2000 "Cleaning Standards for Victorian Public Hospitals"², and the "National Specifications for Cleanliness in the NHS: A Framework for Measuring Performance Outcomes, April 2007³, are specific to health care institutions and are largely unknown in the U.S.

With the "Uniform Clean Surface Standard" (UCSS), the user has a comprehensive guide by which to determine:

- 1) the **need** for cleaning any surface
- 2) the **outcome** of the cleaning effort

The "Universal Clean Surface Criterion" is clearly stated as the basis for the UCSS, which then defines all of the many elements affecting surface cleaning. The Criterion applies to any surface inside or outside any structure in any environment.

By understanding and applying the UCSS, both the cleaning service provider and the service recipient will be able to agree on expectations and outcome. Contracts and cleaning agreements will be better written to accomplish that which is desired.

As a side effect, inefficient and unreliable methods and procedures will become apparent by the definable results they produce when compared

² <u>http://www.health.vic.gov.au/ideas/infcon/cleaning</u>

¹ http://www.bsigroup.com/en/Standards-and-Publications/About-standards/What-is-a-standard/

³ <u>http://www.npsa.nhs.uk/patientsafety/improvingpatientsafety/cleaning-and-nutrition/national-specifications-of-cleanliness/</u>

to the Criterion. Cleaning consistency will increase and rework will be reduced, resulting in cost savings.

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I. Document Focus:

The "Standard" addresses only the determination of the need for cleaning (cleaning indicators) and the appraisal of the results or outcome of the cleaning effort. It is not a cleaning manual and does not attempt to specify or standardize tools, methods, procedures, or techniques for surface cleaning.

II. Approach and Intent:

The "Standard" defines "clean" and "cleaning" according to the meanings found in contemporary English dictionaries. The most descriptive, accurate words and phrases are used so that the concepts related to surface cleaning and its outcomes are easily and uniformly understood. It is intended that the professional custodial terminology introduced, will, with "common and repeated use", become standard.

III. Definitions Relating to "Criterion" Development

A) Clean – Free from undesirable substances, often foreign to the surface..

B) Clean surface -

Visibly clean surface - A surface which shows no evidence of visible blemishes.

Hygienically clean surface - A surface which does not constitute a threat to health as a result of the presence of microorganisms.⁴

C) Unclean – Commonly termed **soiled** or **dirty**. Exhibiting any undesirable substance (blemish) that would indicate a need for cleaning.

D) **Foreign** – A substance that is not an inherent part of a surface. Not all foreign material is undesirable. Floor finish, while foreign to the surface, is deliberately applied to prevent wear and damage to the underlying surface, and to enhance the floor's appearance. Cleaning a finished floor should not damage or remove the finish.

E) Undesirable – Unwanted or unacceptable, due to any of the following:

⁴ http://www.ifh-homehygiene.org/2003/2public/2pubgu07.asp

- 1) Its harmful effect upon human or animal health.
- 2) Its contribution to an unsafe condition.
- 3) Its negative effect upon appearance.
- 4) Its likelihood of damaging the surface.

F) Cleaning – The purposeful, systematic activity of locating, detaching, and removing visible, undesirable substances (blemishes) from an environment or surface. It does not necessarily reduce the level of microbial contamination.

G) Hygienic cleaning – A practice that removes soil or organic matter from an object or surface and also causes removal or destruction of microorganisms through an inherent bactericidal, virucidal or fungicidal activity. One step cleaning and disinfection combined.⁵ Also called microbial reduction cleaning.

H) **Best practices** – For a cleaning practice to be considered "Best" it must result in a clean surface, visible or hygienic, in the least amount of time, with reasonable expense, and with no harm to the cleaner, the surface or the environment.

IV. The "Universal Clean Surface Criterion":

"A surface is judged visibly clean if, upon examination soon after the cleaning effort is completed, no removable blemishes (cleaning indicators) are apparent."

Stated another way, the success of the completed cleaning effort is determined by the result or outcome, i.e., are the blemishes that indicated a need for cleaning completely gone or are they still visible?

V. Cleaning Indicators:

A) Blemishes – Unspecifically termed **soil** or **dirt**. A general term for that which mars the appearance of, or disfigures, a surface or object.

⁵ Dr. Elizabeth Scott, PhD, "Microbial Risk Reduction: The Benefits of Effective Cleaning" CIRI presentation, May 2007

A blemish can be temporary and removable by cleaning, or permanent due to surface damage. Because they are visible and noticeable, readily detectable, removable blemishes act as **indicators** that cleaning is necessary. Blemishes fall into two major categories:

1) **Bonded** – Any blemish that adheres to and resists separation from a surface. These require two steps for removal. First, detachment from the surface; second, complete removal.

a) Streaks/spots – These are marks or bands differing in surface color or texture. These are often the result of incomplete attempts to remove a bonded substance, as when improper mopping leaves a streaked floor after the water evaporates. This includes dried spillage of fluids. Note that a stain is a surface discoloration that, due the addition or removal of coloring agents (pigments), has chemically changed the surface and is impossible to remove by cleaning.

b) Grime –Thin layers of residue from human or animal usage composed of residual oils combined with normal soiling. Common on push plates, door handles, switch plates, file cabinet handles, keyboards, and other surfaces where body oils, cosmetics, ice melt and other sticky residues build up.

c) Film – A thin covering or coating deposited evenly on a surface. Includes mineral buildup in toilet bowls, atmospheric deposits on window glass, soap scum, oxidation (tarnish).

d) Adhesives – These are materials forming unusually strong bonds. Examples are embedded chewing gum, tape residues, dried paint spatters, mastic, dried emulsified floor finish, heated protein, tar and other materials that because of their nature create a semipermanent attachment to a surface.

2) Unbonded – Blemishes held to a surface by gravity or ionic attraction but not mechanically or chemically attached; hence, more easily removed, usually in one step.

a) **Dust** – Fine, dry particulate matter, dust is commonly made up of skin cells, pollen, dander, and other residue combined

with pollutants and natural soil light enough to be airborne. Primarily found on horizontal or inclined surfaces, but may be held to a vertical surfaces such as a computer monitor screen by static charge.

b) **Grit** – Course, particulate materials such as sand, gravel, salt, originating out-of-doors. Abrasiveness can cause surface damage and, on hard surfaces, there may be safety concerns.

c) Lint – Clinging bits of fiberous material. The major sources are fabrics, animals, and humans. Includes cobwebs (spiderwebs).

d) Litter – Scraps of discarded material. May be intentionally discarded waste (cigarette butts, beverage containers, staples) or accidentally dropped items (coins, paper clips).

e) Wet spillage – Spilled drinks, body fluids, lubricants that have not yet dried onto or been absorbed by a surface. While usually given immediate attention due to safety concerns, incomplete removal frequently occurs, especially on porous surfaces.

B. Residue – Anything that remains on a surface or in the pores of a surface when the cleaning operation is ended. Residues may be hard to detect, especially on a surface with depth, such as carpeting. Permeable surfaces such as tile grout and carpet fibers may hold spill residue, and/or contaminated cleaning solutions that, when drying, will wick to the surface to become **indicators**. Residues are left when cleaning efforts are incomplete, stopping short of the complete removal of the blemishes.

C. Microorganisms – The removal of bacteria, viruses, and other organisms not visible to the unaided eye is **not** the purpose or normal outcome of surface cleaning. See **Hygienic cleaning** in Art III.

1) Sanitation is basic surface cleaning, a general term for all cleaning processes that remove unhealthy substances from the environment. The removal of blemishes, trash, rodents, insects and microorganisms that cause or contribute to disease are all examples of

sanitation. Sanitation may or may not include disinfection and/or sterilization.

2) Disinfection – The focused removal of specified pathogenic microorganisms by chemical destruction, heat, ultra-violet light, or oxidation. Clean surfaces are more readily disinfected than heavily soiled ones since blemishes may shelter the microorganisms. Though some cleaning procedures may reduce the number of microorganisms, making the surface sanitary, disinfection is not an expected cleaning outcome. Technically, disinfection may be accomplished by removal of living microorganisms rather than by their destruction.

3) Sterilization – The complete destruction by chemicals, high temperatures, or other means of all microorganisms on a surface, or an object such as a surgical instrument. Soil removal may or may not be part of this process.

VI. Indicator Evaluation Factors

A. Blemish Accretion– Commonly termed resoiling or recontamination. The reappearance and gradual build up of blemishes, without regard for cause, beginning immediately after their complete removal by cleaning. There are unlimited levels of blemish accretion or resoiling, with no way of standardizing what they are. Even simple designations such as light, medium, and heavy are open to numerous interpretations. The phrase, level(s) of cleanliness, is inaccurate and really refers to varying amounts of blemish accretion or degrees of resoiling.

B. Accretion Rate (AR)– Also termed rate of resoiling. The rapidity or speed with which blemishes reappear and build up on a surface. Some blemishes, such as dust, may accrete more rapidly than others. The Accretion Rate differs from day to day, and from one location to another. Factors affecting the Accretion Rate include volume of in and out traffic, occupant density, occupant activity, weather conditions, and environmental controls.

C. Accretion Tolerance (AT) – The level or point to which a particular blemish, or combination of such, may accrete (build up) before generating complaint (for whatever reason) from those in daily

contact with the surface. The Accretion Tolerance, coupled with the Accretion Rate experienced in a facility, will determine the required frequency of the cleaning effort. A surface may be acceptably clean if the accretion is minimal when examined, or it may be unacceptably resoiled if the buildup is deemed too noticeable. At this point, the Accretion Tolerance has been reached or exceeded. The Accretion Tolerance differs greatly according to uses, risk assignments, and occupant preferences and expectations. In an operating theater, any visible dust possibly harboring harmful organisms may be unacceptable. In an industrial plant office, an appreciable daily dust buildup may be expected and its removal, or even just reduction, only every few days may be acceptable. Obviously, with time, experience, and Blemish Accretion Tolerances in an individual facility or in specific areas within the facility.

D. Orderliness – This refers to the arrangement or organization of equipment and furnishings on a surface. Disorder and clutter hamper indicator detection, increasing the time needed to find and remove blemishes. To facilitate effective cleaning, disorder must be corrected or the surfaces will remain uncleaned due to their inaccessibility. However, disorder in itself will not cause a surface to be judged unclean.

E. Surface condition – The condition of a surface will affect its appearance and the ease of cleaning. Damaged surfaces are blemished, but the correction is related to maintenance and repair, not to cleaning. For example, the floor finish protecting the floor under a desk may be severely scratched by the plastic wheels on the desk chair. By definition, the floor may be clean, with the poor appearance due to the damaged condition of the surface. To restore acceptable appearance, the floor must be refinished, not just remopped. Luster, shine, glow, sheen, gleam, glisten, sparkle, shimmer, glitter, twinkle, and similar words relate to light reflection and refraction due to surface condition, and are of no value in describing whether a surface is clean or not. Installing surfaces that are hard to clean, that resoil quickly due to their nature, or are easily damaged by cleaning is obviously unwise.

F. Cleaning Intensity - The degree of effort needed to produce the desired result. Heavy or light cleaning is a description of intensity. This is determined somewhat by risk assignment, but primarily by the Accretion Rate. If it is high and the cleaning frequency insufficient, the intensity of the effort when it does take place increases. Stripping of floor finish may be described as a high intensity effort. Damp mopping of the same surface would be low intensity.

VII. Implementing the Standards:

A. In Specified Frequency cleaning efforts:

While there can be no truly uniform, fixed, or "standard" frequency for performing cleaning tasks because both the Accretion Rate and the Accretion Tolerance vary constantly, specified frequencies, determined by experience in a particular site, will often provide the desired results if given some flexibility. A hospital operating room must be specified to be cleaned (and disinfected) after each operation because of its very high health risk use and the rapid accretion rate of infectious material such as body fluid spillage. A conference room, used once every two weeks, may be quickly cleaned only once every two weeks just before use and still be acceptable due to the fact that while the Accretion Tolerance is low, the Accretion Rate is extremely low as well.

Project work, such as tile refinishing or carpet cleaning, is often specified to occur at certain frequencies.

Note that, according to the "Universal Clean Surface Criterion", each surface, after cleaning, must be blemish free in order to be declared "clean". Cleaning Frequency specifications determine how often cleaning takes place, not how clean a surface is when cleaning is finished. Incomplete or skipped cleaning will make even accurate frequency specifications appear inadequate. In this case, increasing the frequency will not improve the cleaning outcome.

Frequency-based cleaning is done on a set schedule and the results are usually monitored on a managerial level.

B. In Indication Cleaning efforts:

This practice of extensive surface examination leading to detecting, classifying, and successfully removing blemishes whose presence **indicates** the need for cleaning, takes place whenever cleaning is scheduled in a building. The responsibility is placed on the service provider to determine what needs cleaning, how to do it, and the outcome of the effort.

Because of its potential for cost savings while increasing the quality of the cleaning, **Indication Cleaning** is highly recommended. All cleaning personnel should receive training in the **SIR** technique.

SIR is an acronym for See, Identify, and Remove. Following these steps consistently will produce the outcome specified by the Criterion, i.e., surfaces without noticeable, removable blemishes.

See (detect) implies that all surfaces must be examined to find indicators, visible evidence of any blemishes that would show a need for cleaning. Careful examination of literally thousands of different surfaces each time a cleaning effort is undertaken is an extremely demanding task, requiring skills of concentration and observation that are uncommon and must be developed in anyone wishing to do this well. Good eyesight is required, but developing a habit of careful observation is also essential for blemish detection. Following a uniform pattern of movement throughout an area is necessary for thorough examination. Obviously, the detection of animate or inanimate matter that is invisible to the unaided human eye, is not the purpose of or possibility with indication cleaning.

Identify means to classify a blemish to be either bonded or unbonded. Bonded soils may differ greatly from one another and require quite different methods of removal. Initial training in blemish identification will assure that time is not wasted in unsuccessful or surface-damaging removal efforts.

Remove refers to the complete separation of the blemish from the surface so that it can be disposed of properly. Moving the blemish to adjacent areas or changing its appearance on the surface does not meet the "Universal Clean Surface Criterion". Proper equipment, supplies, and correct procedures must be used to assure complete removal without damaging the surface or causing environmental harm. See, **Best Practices**.

In general, removal of unbonded substances should precede removal of bonded indicators because the former require only one step as opposed to two or more steps for the latter. For example, the dry vacuuming of a carpet (one step) to remove dust, lint, litter and grit would be done first, followed by solvent cleaning to remove spots, film, grime, and adhesives The latter involves both soil suspension (defloculation) and an added rinse-extraction step to reduce residue to acceptable levels. See also, **Residue**.

Indication Cleaning requires that the cleaner consistently and accurately apply the "Universal Clean Surface Criterion". If a surface shows an unacceptable Blemish Accretion, the cleaner will identify it and effect its removal. If there are no blemishes apparent, meaning that no cleaning is indicated, the cleaner will move on to other surfaces.

C) Within Budget

The cleaning budget determines how often cleaning activity takes place, how many trained staff members are available for the activity, and what equipment and supplies are provided. It should be sufficient to provide all that is needed to meet the demands of both the Accretion Tolerance and the Accretion Rate. Otherwise, the risks associated with delayed cleaning increase, as do the time and effort to restore surfaces to an unblemished state. Poor equipment and inadequate supplies make the cleaning more labor intensive and, hence, more expensive. Indiscriminate reduction of cleaning budgets may result in more cleaning expense than necessary, accompanied by damage to surfaces and adverse effects on occupant health in the long term. However, a budget, high or low, does not determine whether a surface, area, or building is clean or not after cleaning takes place. That is judged by the application of the "Universal Clean Surface Criterion".

VIII. Risk Assignment– The rating of an area, surface or object

according to the probability of any loss due to its use when unclean. Loss risks taking priority are those associated with human health and safety, with customer opinion due to poor appearance, and surface damage of lesser importance. The higher the risk assignment, the more important increased frequency and thoroughness (intensity) of cleaning becomes. Obviously, assigning a high risk to an area where none exists will waste time and money. Not all areas present health risks requiring hygienic cleaning. Floors, in particular, present low risk even in health care facilities⁶ because no one touches them. Since they are readily re-contaminated once cleaned or disinfected, proper risk assignment is especially important.

Five levels of risk are suggested to allow the "Standards" to cover health related⁷ and food preparation facilities with their higher risk assignments as well as offices or loading docks with much lower demands. It should be noted that expectations may be very high apart from health and safety risks. A high-end home with expensive furnishings and delicate surfaces may be assigned a very high risk due to the owner's concern that even slight blemish accretion may cause damage or detract from the desired image. The same could apply to prestigious offices, corporate headquarters, or any structure where public perception is deemed highly important.

- Very High Risk Primarily health related because the use involves invasive procedures that might endanger the occupants. Includes operating rooms, intensive care units and adjacent rest rooms, lounges, offices, cleanrooms. Cleaning quality assessment should be on-going. Problem correction should be rapid.
- High Risk Again, primarily health related. Some safety issues. Includes general hospital wards, emergency departments, and public rest rooms in all facilities, food preparation areas. Quality assessment should be daily. Problem correction should be on-going.

⁶ CDC Website - <u>www.cdc.gov/ncidod/eid/vol7no2/noskin.htm#21</u> Engineering Infection Control through Facility Design

⁷ These are identical to those introduced by the July 2000 "Cleaning Standards for Victorian Public Hospitals"

- 3) Moderate Risk Related to health and safety, and often appearance. Includes outpatient areas, rest rooms and break rooms in office buildings, public access entries and lobbies, first impression areas, food courts, day care and classrooms, locker rooms. Quality assessment may be less frequent, perhaps weekly or monthly. Problem correction may be less pressing.
- 4) Low Risk Primary concern is appearance, surface damage, with some related safety issues. Includes offices, conference rooms, sales floors, public corridors, and elevators. Infrequent quality assessments may suffice. Problem correction may be infrequent.
- 5) Minimal Risk Usage allows for project scheduling or frequency specification cleaning to remove blemishes when appearance demands. Includes storage rooms, workshops, exterior walkways, loading docks, warehouse areas.

IX. Outcome Assessment (Quality Appraisal)

How often cleaning performance outcome will be judged depends on the Risk Assignment given to the element, area, room or building. A hospital operating room with a Very High Risk assignment will demand an assessment before each new patient is brought in, perhaps several times a day. Walking quickly through a warehouse once every few months may be sufficient in that setting.

A. Purpose

All assessments should be performed with the goal of encouraging improvement in cleaning results. As such, they should not be punitive. Uniform blemish identification makes procedure failure easier to spot and correct and that is the purpose of the UCSS.

B. Priorities

- 1) Very High and High risk assignments require constant monitoring because the cleaning is critical.
- 2) Moderate risks should be assessed on a frequent basis due to the importance of the cleaning in these areas.
- 3) Low risk elements may be evaluated on a less frequent scheduled basis.
- 4) Minimal risk areas require only casual, infrequent monitoring.

C. Response time

- 1) Very High and High risk areas must have immediate corrections performed to remove blemishes found.
- 2) Moderate Risk assessments should see response within a few hours.
- 3) Low Risk determinations may take days to correct.
- 4) Minimal Risk assessments may be corrected at the next scheduled cleaning.

D. Assessment Levels

- Operational The cleaning technician must be trained and capable of critical appraisal of the outcome of each operation performed. Application of the "Universal Clean Surface Criterion" is constant. The simple question "Is it visibly clean or not clean?" must be answered after each procedure is complete. This provides continuous evaluation of the results.
- 2) Managerial The service provider and the service recipient should each be capable of applying the UCSS in assessing the outcome of the technician's work. This survey may be more formal and in written form allowing for scoring and benchmarking, if desired.

3) Independent – On an infrequent basis, an external quality appraisal of the cleaning effort may be valuable. This must be done by one skilled in UCSS applications and may be used to verify the other levels of assessment. Hygienic cleaning results will require specialized tests to determine the effectiveness of the cleaning effort.

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