

GREG THE CHEMICAL GUY • NORTH TEXAS • CURRENT AS OF AUGUST 2026

What usually goes wrong

Four failures I find in almost every building — and what to do instead.

I walk a lot of buildings. Childcare centers, schools, churches, gyms, dental offices, city rec centers. The same four problems come up almost every time, and none of them are about people not working hard enough.

They're about the product, the ratio, and the clock.

This guide is free, and it's useful whether or not you ever buy anything from me. Every claim in it is sourced so you can check me.

IN THIS GUIDE

1. Bleach gets used up, not worn out
2. Dwell time gets wiped away
3. Sanitizing is not disinfecting
4. The dilution is guessed

RULE 00 If something here contradicts the label on the product in your hand, **the label wins** — and I'll say that more than once.

FAILURE 01

Bleach gets used up, not worn out

What people get told

You'll hear that a bleach bucket "goes bad" within a few hours, so it has to be remixed constantly.

That's mostly wrong, and I'd rather tell you than repeat it. CDC's disinfection guideline expressly permits a chlorine solution to be kept **up to 30 days** in a capped, opaque bottle, losing roughly half its strength across that month. A 2016 shelf-life study found the controlling variable isn't time at all — it's pH. Bleach diluted in ordinary tap water sits around pH 9–11, which is the *most* stable range, holding beyond 30 days at room temperature.

So a sealed jug of dilute bleach in a dark cabinet is fine for weeks.

What actually happens in your building

A mop bucket is not a sealed jug in a dark cabinet.

Bleach doesn't lose strength because the clock ran. It loses strength because of what you put in it. CDC is direct about this: hypochlorites are “*substantially inactivated in the presence of blood*” and other organic matter. Organic soil reacts with the chlorine and forms a compound that isn't germicidal — so every dirty mop head, every rinsed cloth, every dip after wiping something genuinely nasty consumes free chlorine that is then gone.

That means the bucket at 2pm has an unknown strength. Not necessarily zero. Not necessarily fine. **Unknown** — because nobody in the building is titrating it.

That's the real problem. Not the chemistry. The fact that you can't tell.

The other three reasons to look at alternatives

Its own label restricts where it goes. A commercial germicidal bleach label carries this, in capitals, as an EPA-approved instruction:

“DO NOT USE ON NON-STAINLESS STEEL, ALUMINUM, SILVER OR CHIPPED ENAMEL.”

CDC separately notes hypochlorites are “*corrosive to metals in high concentrations (>500 ppm)*” — and a common 1:100 dilution is already **525–615 ppm**. Chloride is also the classic trigger for pitting corrosion in stainless steel, which starts as a spot you can't see and ends as a hole. Add fabric bleaching, which CDC lists as a known disadvantage, and a lot of your building is off-limits or at risk.

It can hurt the person using it. Chlorine gas has an OSHA ceiling limit of **1 ppm** and an IDLH of **10 ppm**. Mixing bleach with an acid cleaner releases chlorine gas; mixing it with ammonia releases chloramines. This is not theoretical — CDC documented five separate exposure incidents at two California state hospitals from staff mixing bleach with a phosphoric acid cleaner, sickening at least 14 people.

NIOSH and OSHA jointly advise that cleaning chemicals can “*irritate the eyes, nose, throat and lungs*” and that some “*can cause asthma or trigger asthma attacks.*”

ONE HONEST CAVEAT

Because I'd rather you trust the rest of this: the best prospective study I could find — the Nurses' Health Study II, following **61,539** nurses — found **no association** between bleach exposure and *new* asthma. There is a documented association with COPD in that population, but the researchers themselves note it can't prove causation. So: bleach demonstrably irritates airways and can trigger asthma in people who already have it, and it can produce a genuinely dangerous gas if mixed. It has not been shown to *cause* asthma. Anyone telling you otherwise is overselling.

It costs you an extra step in childcare. Texas childcare rules permit a bleach method, but the specified process is wash → rinse → **soak or spray at least two minutes** → *rinse again with cool water for anything children mouth* → air dry. That extra rinse is real labor, every day, forever.

What bleach is still good at

I'm not going to tell you bleach doesn't work. It does, and CDC endorses it. It is inexpensive, widely available, and it remains a recommended choice for **blood and body fluid spills** and for a handful of organisms where alternatives are weak. Keep some. Know where it is.

The argument against making it your everyday product is practical, not regulatory: you can't verify what's left in the bucket, its own label restricts where it goes, and it's the one product in the closet with a genuine emergency-room failure mode in the hands of a new hire.

WHAT TO DO INSTEAD

- Stop using bleach as the general-purpose daily product on mixed surfaces.
- Keep it for spills and for specific label-directed uses.
- **Never store it in an open bucket.** Capped and opaque, or mixed fresh.
- If you keep a daily bleach process, mix fresh daily — for childcare and community settings that's the standard CDC and national childcare guidance both give.
- Whatever you switch to, pick something that dispenses at a fixed ratio so nobody is guessing.

FAILURE 02

Dwell time gets wiped away

This is the single most common failure I see, and it's the cheapest to fix. It costs nothing. It's purely a habit.

The rule

The surface must stay visibly wet for the entire contact time printed on the label. CDC states it plainly: the surface “*should stay wet during the entire contact time to make sure germs are killed.*”

Spray, wipe, move on — and the kill claim on that label never happened. What you did was clean the surface. Cleaning is worth doing. It is not what the label promised, and it is not what your inspector is asking about.

Why this isn't just best practice

Under federal law it is **unlawful to use a registered pesticide — and every disinfectant and sanitizer is one — in a manner inconsistent with its labeling.** Shortening the contact time is exactly that. EPA's own published example is a commercial dishwasher running a ten-second final rinse against a sanitizer labeled for one minute.

The dwell time isn't a recommendation attached to the claim. The dwell time *is* the claim.

How the same product carries different claims

Here's the clearest illustration I know, from a single EPA-approved bleach label:

CLAIM	DILUTION	CONTACT TIME
Sanitize, food contact	2 tsp / gal	2 minutes
Sanitize, non-food contact	½ cup / gal	30 seconds
Disinfect, hard surfaces	½ cup / gal	5 minutes
Disinfect, <i>C. difficile</i>	1:9	3–5 minutes
Disinfect, tuberculosis organism	1:9	10 minutes

Look at rows two and three. **Same bottle. Same dilution. 30 seconds makes it a sanitizer; five minutes makes it a disinfectant.** The chemistry didn't change. The clock did. Wipe it dry at sixty seconds and you have made no claim at all.

WHAT TO DO INSTEAD

- Post the contact time where the product is used, not just on the bottle.
- Teach the sequence as **spray, leave, come back** — never spray-and-wipe in one motion.
- If a surface dries before the time is up, apply again. A dried surface at minute two is not two minutes of contact.
- On large surfaces, work in sections you can keep wet rather than spraying a whole room that flashes off.
- If your labeled contact time is so long your staff will never honor it, that's a product problem. Pick a product with a dwell time that matches how people actually work.

FAILURE 03

Sanitizing is not disinfecting

These get used interchangeably in conversation. They are not interchangeable in law, on a label, or in an inspection.

They're different claims proved by different tests

SANITIZER**99.9% / 5 min**

Non-food-contact. A **food-contact** sanitizer must hit **99.999% / 30 sec** — a hundred times more reduction, in a tenth of the time.

DISINFECTANT**Pass / fail**

Not a percentage at all: of 60 inoculated carriers, no more than a specified handful may show growth, across three production batches, generally within 10 minutes.

STERILANT**720 / zero**

All spores dead on all 720 carriers, zero positives. Surgical instrument territory, not surfaces.

You'll see “sanitizer is 3-log, disinfectant is 6-log” in trade material. That's tidy but it isn't how EPA writes the disinfectant standard, and I'd rather give you the real shape of it.

EPA's own plain-language summary: “Surface disinfectant products are subject to more rigorous EPA testing requirements and must clear a higher bar for effectiveness than surface sanitizing products.”

Food contact is a separate category entirely

A food-contact sanitizer isn't just stronger — it's legally different. EPA grants a **tolerance exemption** so the residue is permitted to remain on the surface, provided there's adequate draining before food touches it.

That's what “no rinse” actually means. Not a convenience feature — a regulatory status. The sequence is wash, rinse, sanitize, **air dry**. Nothing follows the sanitizer.

Use a non-food-contact product on a food table and you have two problems at once: a hundred times less kill, and a chemical residue on a food surface that has no legal basis for being there.

Where the wrong claim is a real failure

Food prep table

Needs a food-contact sanitizer with a tolerance exemption. A general sanitizer is both weaker and a residue violation.

Diaper changing pad

Needs a disinfectant, after cleaning. Texas rules require sanitizing after *every* use — and fecal matter actively consumes the germicide, so spray-and-wipe fails twice.

Blood spill

Disinfectant with the right claim, and clean first. CDC notes germicides are “*substantially inactivated in the presence of blood.*” The correct product on an uncleaned spill still fails.

Gym mat

Contact time is the whole claim. Same label, 3–5 minutes for one organism and 10 for another. Wipe at sixty seconds and you cleaned a mat.

WHAT TO DO INSTEAD

- Walk your building once and write down what each surface actually needs: cleaner, sanitizer, food-contact sanitizer, or disinfectant. Most facilities need three products, not one and not nine.
- Match the product to the surface, then post which is which.
- Never assume a product carrying one claim carries the other. Read the label — many carry both, at different dilutions and different dwell times.

FAILURE 04

The dilution is guessed

Both directions cost you

Too strong wastes product, leaves residue that attracts soil, damages finishes, and increases exposure for the person applying it. I've walked into buildings where the floors were sticky and everyone assumed the floor was worn out. It wasn't. It was over-concentrated cleaner nobody had rinsed in a year.

Too weak means no valid claim. The label's tested performance exists at the labeled dilution and nowhere else. A half-strength quat is not a half-effective disinfectant — it's a product making no claim you can stand behind, and an inspector asking how you know it works has a fair question.

Why “a glug” happens

It isn't carelessness. It's that at 5pm on a Friday, with a closing checklist and no measuring cup within reach, people do what's fast. If the correct method is slower than the wrong one, the wrong one wins — every time, in every building, regardless of training.

The fix is engineering, not discipline. Make the right ratio the easy ratio:

- A wall-mounted dilution station that meters automatically
- Pre-measured pouches or cartridges where volume is high
- A pump that delivers a fixed dose per stroke
- A chart at the fill point sized to read at arm's length, in the units your staff actually use

The cost math worth running

Buyers compare cost per case. That's the wrong unit. **Compare cost per diluted gallon** — the number that reflects what you actually use.

Cost per diluted gallon =
$$\text{Cost per container} \div (\text{Container volume} \times \text{Dilution factor})$$

Example: \$32 per gallon of concentrate at 1:64

1 gal concentrate → 65 gallons of use solution

\$32 ÷ 65 = \$0.49 per diluted gallon

Figures illustrative — run it with your own invoice and your product's actual labeled dilution.

Two things this exposes immediately. A ready-to-use product that looks cheap per bottle is usually far more expensive per diluted gallon, because you're paying to ship water. And **over-dilution is a cost line nobody tracks** — a crew running 1:32 on a product labeled 1:64 is spending double, invisibly, forever.

If you sell into Texas school districts or municipalities, this framing matters for another reason: Texas Education Code §44.031(b)(7) makes “*the total long-term cost to the district to acquire the vendor's goods or services*” a statutory best-value criterion. Cost per diluted gallon is a defensible number for a purchasing file. Cost per case isn't.

WHAT TO DO INSTEAD

- Put a dilution chart at every fill point, sized to read from where the person stands.
- Move high-volume products onto a metered dispenser.
- Run cost-per-diluted-gallon on your top three products this month. It's usually the fastest money you'll find.
- Audit once a quarter: watch someone actually fill a bottle. Don't ask them how they do it — watch.

THE SHORT VERSION

If you do nothing else in this guide

01 • Leave it wet

Spray, walk away, come back. The dwell time is the claim.

02 • Clean before you disinfect

Soil eats the product.

03 • Match the claim to the surface

A food table and a diaper pad are different jobs.

04 • Measure it

Make the right ratio the fast ratio, or it won't happen.

None of that requires anyone to work harder. Most of it costs less than what you're spending now.

THE LABEL IS THE LAW

Everything above is general information to help you ask better questions. **It is not legal advice, regulatory advice, or infection control advice, and it is not an instruction or warning accompanying any product.**

The EPA-registered label on the container in your hand is the controlling source for dilution, contact time, approved surfaces, efficacy claims, protective equipment, and storage. Where anything here differs from that label, **the label governs**. Using a registered disinfectant inconsistent with its labeling violates federal law.

Which rules apply to your facility depends on your license type, your jurisdiction, your accrediting body, and facts I don't know. Verify with your own licensing authority and your own counsel. Regulations change; this guide is accurate to the best of my knowledge as of the date on page one and is not updated automatically.

Sources

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FIFRA §12(a)(2)(G), 7 U.S.C. §136j(a)(2)(G)

40 CFR §180.940 (food-contact tolerance exemptions)

OCCUPATIONAL HEALTH

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CHILDCARE, FOOD & MATERIALS

26 Tex. Admin. Code §746.123(52)

Caring for Our Children, Standard 3.3.0.1 and Appendix J

FDA Food Code 2022, §§1-201.10(B), 4-501.114, 4-703.11

Specialty Steel Industry of North America, *Pitting and Crevice Corrosion*

EPA-approved master label, Clorox Commercial Solutions Germicidal Bleach, EPA Reg. No. 67619-32

Want a second set of eyes on your building?

I'll walk your facility, look at what you're using and how it's being mixed, and tell you what I'd change — including the changes that don't involve buying anything from me. No charge, no obligation.

If you do move to a product program, staff training is included and I come back when your people turn over.

GREG THE CHEMICAL GUY

214-906-5476 • greg@gregthechemicalguy.com

Monday–Friday, 7:30 a.m. – 5:30 p.m. Central • North Texas

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*Including in buildings I
don't supply.*