

MATERIAL Matters



Built for Hygiene, Material Handling for Pharma, Food and Chemical



The Question Behind This Issue

**Is your equipment
actually built to be
cleaned, inspected,
and trusted?**

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Editor's Note



Dear Readers,

Hygiene used to be a checkbox in Indian manufacturing. As of January 1, 2026, it is law for pharma, and the same pressure is building fast across food and chemical processing too. The Revised Schedule M has moved from notification to enforcement, and plants across all three sectors are being asked a question they cannot dodge anymore.

This issue is built around that question. We look at what the new pharma law actually asks for, how the same hygienic design principles apply to food and chemical plants, how our own Pfizer project answered this in practice, and how the rest of the world has been building to this standard for years already. Let's dive in.

**Best regards,
Team Dhanvanthri Engineers**

Director's Note



“At Dhanvanthri, our goal has always been simple: to engineer Indian-made systems built to global cleanroom benchmarks.”

The enforcement of Revised Schedule M represents a long-awaited elevation of Indian manufacturing. For years, material handling was treated as a secondary utility, something running in the background. Today, it sits directly under the regulatory lens of cleanroom compliance and risk assessment.

At Dhanvanthri, our goal has always been simple: to engineer Indian-made systems built to global cleanroom benchmarks. As our pharma, food, and chemical partners navigate stringent audits from CDSCO, USFDA, and EU-GMP, we are committed to delivering equipment that doesn't just move products, but actively protects product integrity and audit readiness. Together, we are building India's cleaner, smarter manufacturing future.

**Mr. Anil Athri,
Managing Director**

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Cover Story



Revised Schedule M Is Now Law: What It Means for Your Plant and Equipment

The Revised Schedule M to the Drugs and Cosmetics Rules, 1945 is now the single biggest regulatory shift the Indian pharmaceutical industry has seen in four decades. Large manufacturers had to comply back in mid-2024. Small and medium manufacturers, who applied for an extension through Form A, had until December 31, 2025. That grace period is over.

The numbers behind this are worth sitting with. Over 13,000 pharma plants across India now fall under this law, and CDSCO has directed state drug controllers to begin monthly inspection reporting. Non-compliance is not a small penalty anymore, it can mean show-cause notices, license suspension, product recalls, or facility closure. Industry estimates put remediation cost at INR 2 to 10 crore per facility, on top of lost production during upgrade work.



This is not just a pharma story

Pharma is where the law has landed first, but the underlying pressure is broader. Food processing plants in India already operate under FSSAI sanitary and hygienic requirements, and increasingly benchmark themselves against EHEDG, the European hygienic design standard that has shaped food equipment procurement for decades. Chemical processing plants face a parallel challenge, not microbial contamination, but corrosion and residue from repeated washdown and aggressive cleaning agents, which is why corrosion-resistant, washdown-rated equipment has become the practical standard there too. Three sectors, three regulators, one shared answer, equipment that is genuinely built to be cleaned.



What actually changed

Revised Schedule M is not just paperwork. It writes detailed plant and equipment requirements into law for the first time, things like validated cleaning procedures, documented material traceability, and equipment designed to be cleaned rather than just wiped down. In effect, it brings India's legal minimum close to what hygienic design bodies in Europe and the US have treated as best practice for years. We unpack that global comparison later in this issue.

What this means for your equipment, in practical terms

Material contact surfaces need to be smooth, welded, and free of the crevices and threaded gaps where residue and bacteria can hide.

Cleaning needs to be provable, not assumed. That means equipment designed for validated CIP or washdown, not equipment that just happens to survive a hose down.

Documentation follows the equipment. Material certificates, weld records, and design rationale need to exist and be retrievable during an inspection.

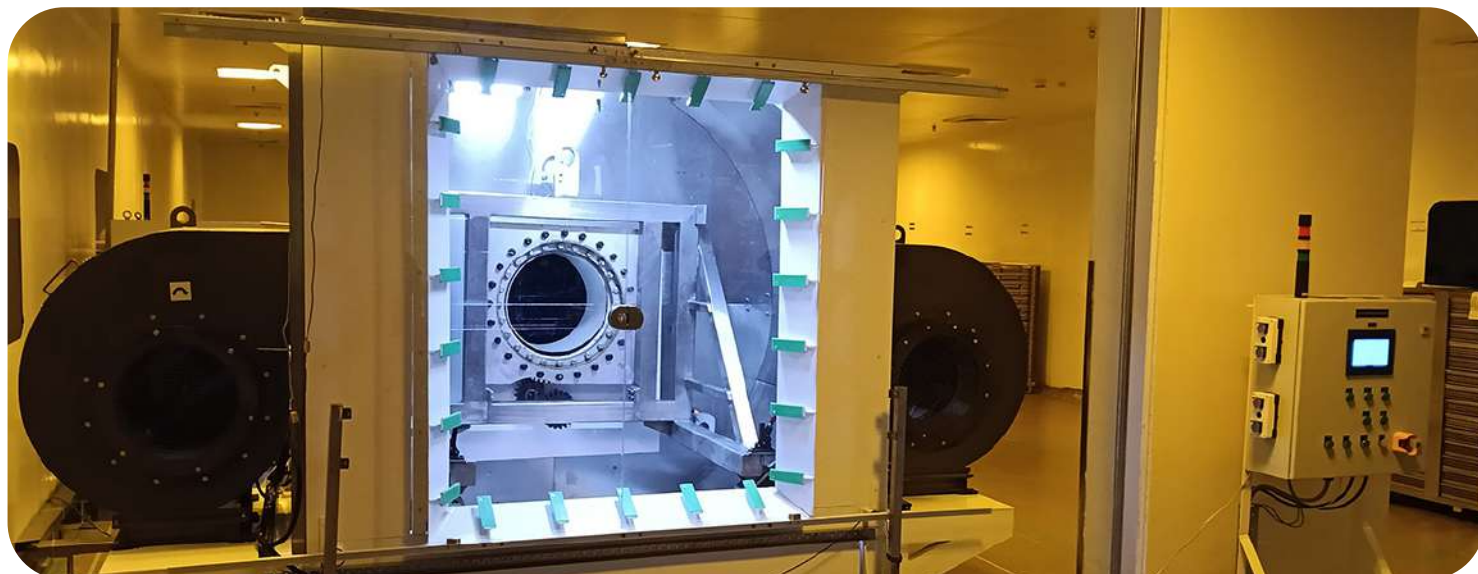
Retrofitting old lines is often more expensive than designing correctly the first time, which is exactly the gap most plants are discovering right now.

If your plant is still treating this as a compliance formality, the inspection queue will make the decision for you. The plants moving early, across pharma, food, and chemical alike, are the ones turning this into a competitive advantage instead of a scramble.

“Cleaning needs to be provable, not assumed.”

Blog Highlights

Cutting Pharma Drying Time in Half, for Pfizer



Before Schedule M made hygienic, auditable equipment a legal baseline, we were already building to it. Here is the project summary, with the exact technical metrics.

Client / Sector	Pfizer
Key Challenge	Manual, slow pallet drying taking 3 to 4 hours with excessive operator touchpoints, trapped water pooling, and cleanroom cross-contamination risks.
Engineered Solution	A fully automated, GMP-compliant cleanroom drying line featuring precision tilted-angle conveyor flow, high-velocity air knives, and complete 316L stainless steel washdown design.
Key Metrics	50% cut in drying cycle time (from 3–4 hours down to ~90 minutes), zero manual touchpoints, and 100% repeatable GMP audit compliance.

Sterilized vial pallets were drying manually, tilted by hand and dried by fans, over several hours per pallet. We engineered a PLC controlled system that tilts each pallet through programmed angles, drains trapped water, and dries it with high efficiency blowers and continuous exhaust, with every cycle repeatable and audit ready.

Read the full case study on our website for the complete engineering breakdown.

Q&A with Leadership



In conversation with Anil Athri, Managing Director

How does Revised Schedule M shift the role of material handling from secondary utility to core audit compliance?

Conveyors are no longer viewed outside the contamination envelope. Under Revised Schedule M, plants are required to conduct comprehensive contamination risk assessments aligned with global standards like ICH Q10. Material handling equipment directly interfaces with primary and secondary packaging; therefore, every belt, roller, and guide rail is now scrutinized for cross-contamination risks. What was once seen as simple transport mechanism is now evaluated as a core, auditable component of clean-zone integrity.

What are multinational audit teams (USFDA, WHO, EU-GMP) looking for when inspecting conveyor systems?

Global regulatory bodies evaluate four critical pillars:

1. **Cleanroom & MOC Compatibility:** Strict verification of product-contact materials (such as certified SS 316L) and certified sanitary finishes (typically $Ra \leq 0.8 \mu m$ to prevent bacterial adhesion)
2. **Complete Traceability & Validation Chain:** A seamless documentation trail including GA drawings, DAP, DQ (Design Qualification), FAT, IRN, and IQ/OQ/PQ protocols.
3. **Hygienic Maintenance & CIP:** Design features that enable tool-less disassembly, rapid wipe-downs, and validated Clean-in-Place (CIP) routines.

Auditors don't take hygiene for granted; they demand documented proof, material test certificates, and complete validation records.

What is Dhanvanthri's vision for helping Indian plants meet global cleanroom standards?

Our vision is to deliver Indian-engineered material handling systems built to the highest global standards equipment that can pass international audits without hesitation. The pharma and hygiene sectors are inherently demanding, but our strength lies in engineering flexibility and innovation. By partnering closely with our clients from early design qualification through shop-floor commissioning, we prove that Indian manufacturing can not only meet global benchmarks, but set them.

Q&A with Engineering



In conversation with Rohit, Design Engineering

What does a design engineer actually do on a project, day to day?

People assume it's mostly CAD, and some days it is. But half my day is translating a client's vague ask, "we need this to move faster", into something with real numbers: load, speed, tolerance, material. The drawing is the easy part once those are locked. The harder part is catching the mismatch between what looks fine on screen and what a welder on the shop floor can actually build repeatably.

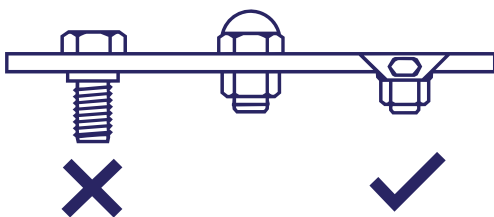
What tools do you rely on most, and has that changed in recent years?

SolidWorks for modelling, AutoCAD for GA drawings our vendors still expect in 2D. What's changed is how early simulation comes into the process, we run stress and motion checks before a single part is cut, not after something fails in testing. That shift alone has cut our rework cycles noticeably. The tools keep getting better; the judgment on when to trust them still comes from experience.

What's the biggest challenge facing design engineers in Indian manufacturing right now?

Standardization, honestly. In Europe or the US, a design engineer can assume a certain grade of steel or a certain motor spec is available off the shelf. Here, vendor quality varies plant to plant, so a design that's technically correct on paper still needs built-in tolerance for what's actually available locally. Designing for ideal conditions is easy. Designing for the supply chain you actually have is the real skill.

Fun Fact



There is an international hygienic design standard that specifies exactly how a bolt should sit on a conveyor frame, whether it should be recessed, capped, or avoided entirely in a product zone. It sounds excessive, until you remember that a single exposed thread is one of the most common places bacteria collect on a production line. In hygienic engineering, the smallest details are usually the ones that matter most.

Industry Insights

How the World Builds Hygienic Equipment, and Where India Now Stands



Revised Schedule M did not invent hygienic equipment design, it caught Indian pharma up to a standard that food and chemical processing have been edging toward for years. In Europe, the EHEDG (European Hygienic Engineering and Design Group) has published detailed hygienic design guidelines since the 1990s, and in the US, 3-A Sanitary Standards has played a similar role, both originating in the food industry before pharma adopted the same thinking. Neither is legally mandatory in their home markets, but both have functioned as the real procurement benchmark for any equipment buyer serious about food or pharma safety.

What these global standards actually specify

- **316L stainless steel** for anything touching product, chosen specifically for repeated sanitizer exposure, standard practice in pharma and food, and increasingly in chemical handling for corrosion resistance.
- A minimum weld and corner radius, EHEDG guidelines call for **at least 1/16 inch**, small enough to overlook, large enough to harbor bacteria or residue if ignored.
- **IP69K rated motors and drives** wherever equipment sits in a washdown zone, whether that washdown is sanitizing a pharma line or rinsing corrosive residue off a chemical line.
- Sloped, open frame construction so water and cleaning agents drain away instead of pooling.
- A dedicated guideline, EHEDG Doc 44, exists purely for belt conveyors, that is how seriously the global industry treats this single piece of equipment.

13,000+

Indian pharma plants now fall under Revised Schedule M, and the same hygienic design principles are fast becoming the export benchmark food and chemical plants are measured against too.

Where food and chemical plants fit in



Food manufacturers in India already answer to FSSAI's sanitary and hygienic requirements, and the more forward-looking plants are benchmarking against EHEDG voluntarily, since it is increasingly what export customers expect. Chemical processing plants face a different but related pressure, equipment needs to survive aggressive washdown and cleaning agents without corroding, which is why corrosion-resistant, washdown-rated construction has become the de facto standard there, even without a single named regulation forcing it. Revised Schedule M is the first Indian law to make this mandatory in writing, but the direction has been the same across all three sectors for a while.

For years, an Indian plant could choose whether to build to this level. Regulation and export pressure are now making that choice for more and more plants. The good news is that equipment built to these principles was never just a compliance exercise elsewhere in the world, it also meant less downtime, easier audits, and equipment that lasted longer under repeated washdown.

Employee Spotlight

Precision On The Shop Floor: The Man Behind The Metal



Spotlight: Paras | Production In charge

On paper, every drawing looks perfect. But on the shop floor, precision means knowing exactly how the metal will behave when the torch hits it and making sure it holds up on the very first try.

The Role & The Engine

As Production Incharge at Dhanvanthri Engineers, Paras leads end-to-end manufacturing across fabrication, machining, specialized welding, sheet-metal processing, and final assembly. Bridging the gap between Design, Planning, Quality, and shop-floor execution, he ensures every system leaves the plant audit-ready and on schedule.

Technical Milestone: Taming 700°C Heat with SS310

Every custom project teaches you something new, but our 5-meter SS310 screw conveyor stands out. Built to convey material at scorching temperatures of 600°C–700°C, standard fabrication rules didn't apply. To protect performance, our team engineered a specialized cooling jacket around the trough. The true test came during the critical 7-bar hydro pressure test the jacket sustained full pressure with zero cracks, zero leakage, and functioned seamlessly on the very first attempt. That success belonged entirely to the dedication and skill of our shop-floor craftsmen.

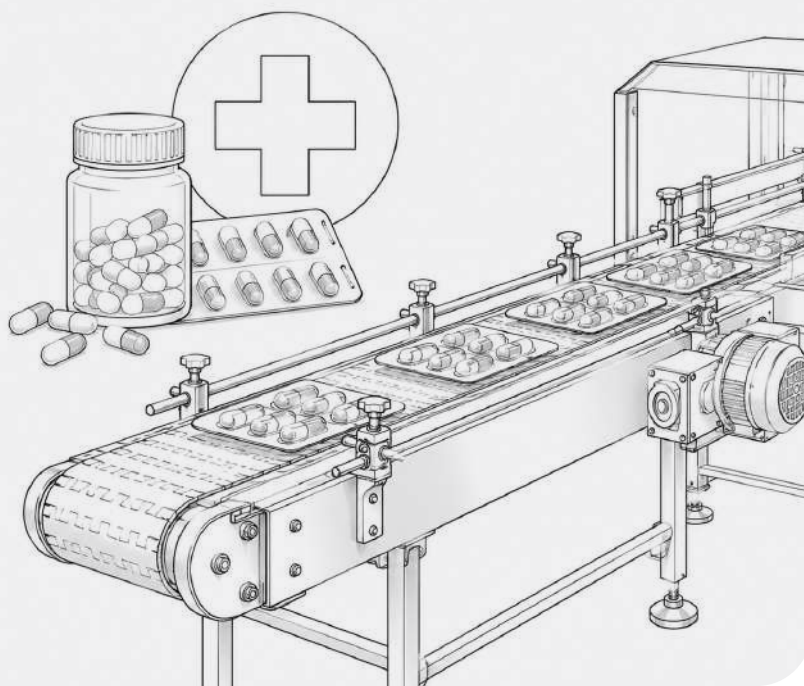
On Dhanvanthri's Culture

What sets Dhanvanthri apart is the trust and autonomy given by management. We are empowered to take ownership, innovate production methods, and solve bottlenecks right on the shop floor. When design logic and shop-floor craftsmanship collaborate closely, customer commitment turns from a promise into solid steel.

Myth vs Fact

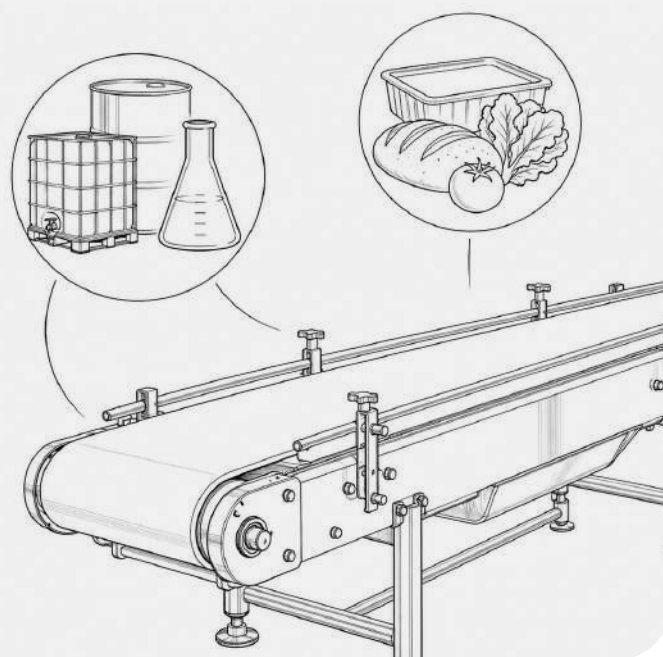
Myth

Hygienic material handling design is a pharma-only requirement.



Fact

The hygienic design principles behind Revised Schedule M, smooth surfaces, sealed motors, cleanable geometry, originated in the food industry through EHEDG decades ago. Chemical processing plants benefit just as much, since the same corrosion resistant, easy to clean equipment reduces contamination risk and extends equipment life regardless of what is moving through it. If your plant handles anything that needs to stay pure, consistent, or safe, this applies to you.



Quarter That Was

Project: Spiral Conveyor

Industry: Leading E-Commerce
Logistics Player

Capacity / Metric: 15kg/mtr Throughput

Status: Completed



Project: Idler Roller Conveyor with inclined cleated belt conveyor

Industry: Top Formulation Pharma Plant

Capacity / Metric: 20 crates per min

Status: Installation



Project: CYL. Rotation and Heating chain conveyor phase 1 & 2

Capacity / Metric: 30 Cylinder Per Hour

Status: In Progress



Event Spotlight

Ganpati Festive Celebrations

Celebrating sustainability and craftsmanship, our team stepped away from their desks to sculpt handcrafted, eco-friendly clay Ganeshas right at their workstations



Event Spotlight

The Sign & Slogan Contest

Employees competed to write impactful and inspiring slogans for the new safety and workplace signages across DEPL premises.



Paras Salvi

“Load nassel tar conveyor band
garaj nassel tar light band!”



Prashant Kendre

“कन्वेयर बेकार नहीं चलता...
तो लाइट क्यों चले भाई?”



Chandrakiran Bhole

“जे घरात ते कार्यालयात !!
वीज वाचवा - शिस्त पाळा !!”



Hrishikesh Patil

“Lights have feelings too,
let them rest!”

Looking forward to another quarter of building equipment our clients can trust, across pharma, food, and chemical, and audits our clients can pass without a second thought.

Together, we continue building smarter, cleaner material handling solutions for India's future.



Dhanvanthri Engineers

dhanvanthriengineers.com