Chain of Custody for Environmental Labs: The Form Is Not the Requirement

A legal chain of custody procedure is conditional under the TNI standard. Reconstructing a named sample is not, and it is the harder obligation by far.

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IN BRIEF

Under the TNI standard, environmental lab chain of custody is conditional: a legal procedure is required only where the customer requires one. Every sample still needs receipt criteria, indelible identification, preservation and holding time checks, and one identifier that rebuilds the result from the report back to the person who received it.

Key takeaways

- A legal chain of custody procedure is a conditional TNI requirement triggered by the customer, not a rule on every sample.
- Every sample needs the receipt record: acceptance criteria, identification, preservation and holding time, one identifier.
- Control of records is among the most cited findings, and most did not affect the data. The lab could not show the work.
- A sample is in custody in your possession, within your view, or in a defined secured location. The building is not one.
- If a client specifies legal custody, or the data may reach a court, the full signed chain is the requirement. That stands.

If your laboratory runs routine environmental compliance work, the signed chain of custody form on your bench is probably not what your assessor is going to write you up for. The requirement underneath it is narrower and harder: that you can reconstruct what happened to one named sample, on demand, from the report back to the person who received it.

Under the TNI standard a legal chain of custody procedure is required only if your customer requires one and you accepted the samples on that basis. What applies to every sample is something else entirely, and it is where findings are made. This covers what the form is actually for, what the standard requires of every sample, what a custody record has to contain, why assessors test reconstruction rather than signatures, the four different things “chain of custody” means depending on who is speaking, and what software can honestly claim to do about any of it.

What is a chain of custody form for?

The claim, as it is usually stated: an unbroken, signed custody form on every sample is what makes environmental data defensible, and a gap in the signature chain is what an assessor writes up.

That is what most environmental analysts were trained on, and it is not a foolish position. It is a clean, teachable rule: one form, one signature per transfer, no gaps. It audits quickly. It survives staff turnover. For work that may end up in front of a judge it is also correct.

The trouble is that it describes a client requirement and a litigation practice, and a great deal of writing about environmental laboratories presents it as the accreditation standard. Those are different obligations with different triggers, and a laboratory that has satisfied the first can still fail the second.

What does the TNI standard actually require?

The relevant clause opens conditionally. In the environmental laboratory standard published by The NELAC Institute, known throughout the sector as TNI, a legal chain of custody procedure is required *if* a customer requires legal chain of custody procedures and the laboratory accepts those samples. It is a conditional

obligation attached to a category of work, not a blanket rule attached to every bottle.

What does apply to every sample sits in the receipt clauses: acceptance criteria for the condition a sample arrives in, indelible identification, a preservation check, a holding time check, a quantity check, and an unambiguous laboratory identifier that links collection date and time, receipt date and time, client and project, the field identifier, the analyses requested, and the person who received it.

Read those two side by side and the emphasis moves. The standard is not asking who signed. It is asking whether the record can be rebuilt.

> - Acceptance criteria applied to the condition the sample arrived in
> - Indelible identification that survives aliquoting and relabelling
> - A preservation check recorded at receipt, not reconstructed later
> - A holding time check against the collection time, not the receipt time
> - A quantity check sufficient for the analyses requested
> - One unambiguous laboratory identifier linking collection and receipt date and time, client and project, field identifier, requested analyses, and the person who received it

> **NOTE**
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> Check your edition. The clause text described here is from the environmental laboratory standard draft dated 14 May 2026. Standards are revised and accreditation bodies adopt them on their own schedule. Confirm the numbering against the edition your accreditation body assesses you to before quoting a clause in a client-facing document.

What must a chain of custody record actually contain?

Whether the custody is legal or routine, the record is built from the same fields, and the ones that fail assessment are rarely the signatures. They are the times.

FIELD	RECORDED BY	WHY IT HAS TO SURVIVE
Collection date and time	The sampler, in the field	Starts the holding time clock; a time written later cannot be verified
Sampler identity	The sampler	The first custodian; without a name there is no chain to begin
Field identifier and site	The sampler	Connects a bottle to a place; the laboratory number replaces it, and must map back
Container count, matrix, preservative	The sampler, verified at receipt	Preservation is the step that cannot be repaired afterwards
Each transfer: from, to, date, time	Both parties, at the moment of handoff	The chain itself; a gap here is the legal-custody failure
Condition and temperature on receipt	The laboratory	The acceptance criterion the standard requires for every sample
Laboratory identifier assigned	The laboratory	The one identifier everything downstream hangs off
Receipt date, time and receiver	The laboratory	Closes the field portion; the standard names all three

Two rows do most of the damage. Collection time, because everything downstream is measured from it; and receipt condition, because it is the acceptance decision the standard requires and the one most often recorded as a tick rather than a temperature. Sample tracking that assigns the laboratory identifier at receipt and carries the collection time forward is what turns this table into one record rather than three documents.

Why does an assessor care about reconstruction rather than signatures?

Because that is what the findings data shows they cite. In an institute review, assessors from three state programmes put control of records among the most common on-site findings, and made a point that is easy to miss: most of those findings did not affect the data that was generated. They meant the laboratory could not produce objective evidence that the activity had occurred.

The clause-level examples are ordinary bench work, not paperwork theatre. The original incubator temperature and the corrected value after thermometer correction both have to be recorded, because the derived number without its source cannot be checked. Standard and reagent origin, receipt and preparation have to sit with the run that used them. The equipment used in the analytical testing has to be identified, so the run can be rebuilt rather than merely believed. An audit trail that keeps the prior value is what makes the first of those possible.

Custody itself is defined more tightly than most laboratories assume. A sample is under custody if it is in your physical possession, within your view, or in a defined secured storage location. “In the laboratory” is not a defined secured storage location. That single point catches more laboratories than a missing signature ever has, because the building feels like custody and does not meet the test. The same discipline runs through how an environmental monitoring lab handles a sample from collection onward.

Why did the form become the requirement, and what is it still right about?

The form hardened into the requirement for two good reasons. For evidentiary and litigation work it genuinely is the requirement, and a client who specifies legal custody is entitled to exactly the unbroken signed chain the folklore describes. Nothing here changes that, and if your samples may be produced in court you should treat the full chain as mandatory regardless of what the accreditation clause says.

The second reason is that a signature is checkable in seconds and reconstructability is not. You can audit a form across a bench in an afternoon. Auditing whether a named result can be rebuilt from its reagent lots and instrument records takes a morning per sample. The simplification is what a busy quality manager can

enforce, which is why it spread.

It is also worth knowing that “chain of custody” names five different objects depending on which doorway the sample came through. When a vendor offers you a chain of custody module, ask which of the five it built.

WHO IS SPEAKING	WHAT THEY MEAN BY CHAIN OF CUSTODY	WHAT IT HAS TO SURVIVE
Forensic analyst	A seal number, a named handler and a storage location for every transfer	Cross-examination by a defence attorney
Environmental sampler	The field document that records collection time and starts the holding time clock	A holding time calculation an assessor can rebuild
Toxicology and biospecimen	Donor identity, tamper-evident seal, and a signed handoff at every transfer under a federal or clinical programme	A challenged result, and the donor’s right to see the chain
Cannabis sampler	A form that cannot be edited once custody changes between licensees, plus a sampling video in some states	A state inspection against a specific regulation
Licensee or client	The state traceability manifest that authorises a package to move	A system outage without an untracked transfer

Only the second of those is what an environmental accreditation assessor is testing on routine work, and it is the one most often treated as a formality. An environmental testing programme that gets the field document right has covered more ground than one with immaculate signatures and a vague collection time.

How does software improve chain of custody documentation, and where does it stop?

The honest answer is narrower than the pitch and more useful. Software improves chain of custody documentation in exactly three ways, and it changes what you should refuse to pay for.

It **assigns one identifier at receipt** and carries it through every aliquot, so the field identifier, the laboratory number and the report can be walked back to each other without a person’s lookup. It **records each**

transfer as an event with the two parties and a timestamp, rather than as initials on a form, so a gap is visible the moment it occurs rather than at audit. And it **holds the receipt checks as data** — temperature, preservation, holding time against collection time — so the acceptance decision is a record rather than a tick. The narrow, defensible claim is reconstruction speed: everything behind a named result, inside the hour an assessor asks for it.

What it does not do is make you compliant. An electronic chain of custody module sold to you as a TNI mandate is being sold against a requirement that is conditional, and if the pitch cannot tell you which clause it satisfies, the pitch has not read the clause. Most of what assessors cite across the ISO/IEC 17025 world is quality system work that software supports and cannot perform: management review inputs, risk identification, competence records, and reference standards that were not calibrated.

And the manipulation that makes a result untrue usually happens upstream of any laboratory system. The EPA Inspector General warned the environmental laboratory community in 2001 about improper manual integrations used to make control samples appear to meet quality control requirements, and the remedy recommended was management spot-checking a percentage of integrations, not a system. A clean audit trail can sit on top of a falsified number. An environmental LIMS holds the custody record; it cannot see what the chromatography software did before the number arrived.

What a LIMS carries in this work

The reconstructable record, for one named sample: the collection time the clock started from, the receipt checks as data against the standard's acceptance criteria, each transfer as a timestamped event, the reagent lots and the instrument identity attached to the run, and one identifier holding all of it together. It carries the legal chain where a client has asked for one, and the routine record the standard requires whether or not anyone asked.

> **How LabLynx handles this**
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> LabLynx is built around that sample identifier. A system that holds the receipt record, the preservation and holding time checks, the reagent lots and the instrument identity against one identifier can produce everything behind a named result inside the hour an assessor asks for it, and the environmental configuration is built for exactly that sequence. It will not write your management review, and it cannot see what happened in your chromatography software before the number arrived. We would rather say that than sell you a module against a clause that does not apply to you.

Frequently asked questions

Does TNI require a custody form on every environmental sample?

No. The clause is conditional: a legal chain of custody procedure is required if a customer requires one and the laboratory accepts the samples on that basis. What applies to every sample is the receipt record — acceptance criteria, indelible identification, preservation and holding time checks, quantity, and one laboratory identifier linking collection, receipt, client, project, analyses and receiver.

What counts as custody under the TNI standard?

A sample is under custody when it is in your physical possession, within your view, or in a defined secured storage location. The laboratory building as a whole does not qualify, so a cooler left on an open bench with nobody watching it is out of custody, even though nothing visibly wrong has happened and nobody has done anything they would recognise as a breach.

What fields does a chain of custody record have to contain?

Collection date and time, the sampler's identity, the field identifier and site, container count with matrix and preservative, each transfer with both parties and the time, the condition and temperature on receipt, the laboratory identifier assigned, and the receipt date, time and receiver. The two that fail assessment most often are collection time and receipt condition, not the signatures.

What do assessors cite instead of missing signatures?

Control of records. State programme assessors reported it among the most common on-site findings, and noted that most of those findings did not affect the data: the laboratory could not produce objective evidence that an activity had occurred. The examples are bench-level, such as an original temperature not recorded alongside its correction, or the instrument not identified against the analysis.

How does software improve chain of custody documentation?

In three specific ways: one identifier assigned at receipt and carried through every aliquot, each transfer recorded as a timestamped event rather than initials, and the receipt checks held as data rather than ticks. The result is reconstruction speed — everything behind a named result inside the hour. It does not make a laboratory compliant, and it cannot see manipulation upstream in instrument software.

Does this apply to samples that might end up in court?

No. If a client specifies legal chain of custody, or there is any prospect of litigation or enforcement, the full signed and sealed chain is the requirement and this article changes nothing about it. The conditional clause exists so that routine compliance work is not held to a litigation standard; work that may reach a court is held to it in full, from collection onward.

Sources and references

1. TNI Environmental Laboratory Sector Standard, Volume 1 Module 2

   The NELAC Institute

2. Assessors Reveal Top 10 Assessment Findings

   The NELAC Institute newsletter

3. Open letter to the environmental analytical laboratory community on laboratory fraud

   U.S. Environmental Protection Agency, Office of Inspector General

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Brandon Holland is LabLynx's Marketing & Operations Digital Solutions Architect. He builds and runs the digital systems behind the company's public surface, from the website and content architecture to the tooling that keeps product information accurate everywhere it appears. He writes about laboratory informatics from the systems side: how lab records get structured, searched, and kept defensible as a lab scales.

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https://www.lablynx.com/resources/articles/environmental-lab-chain-of-custody-management/

Downloaded September 7, 2026. LabLynx builds laboratory informatics software: LIMS, ELN, LIS and lab automation.