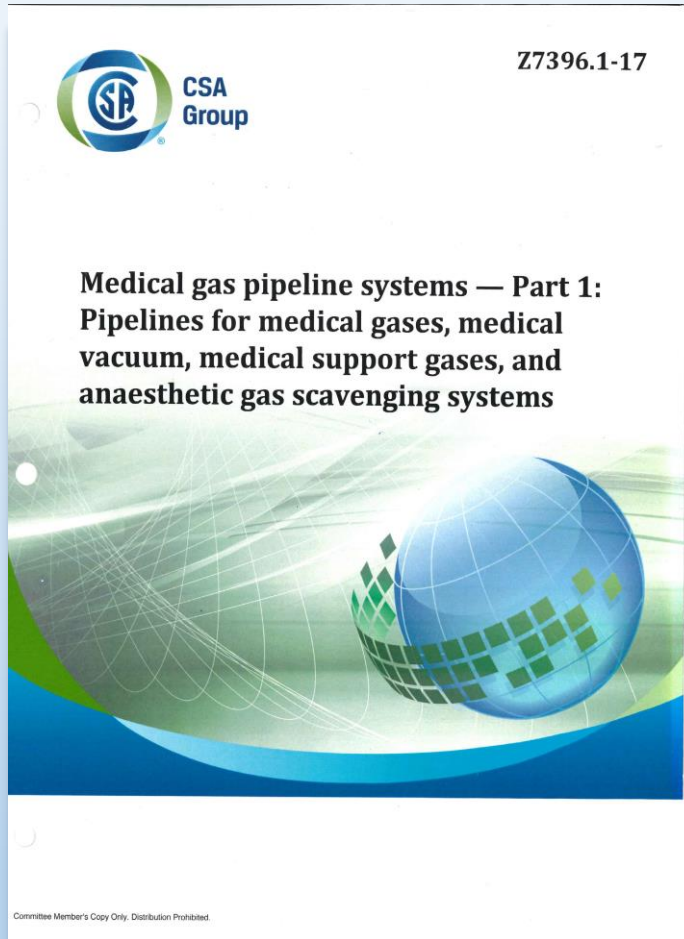


CSA Z7396.1-17 – Medical Gas Pipeline Systems

2018 CHES Webinar



A Need to Know Discussion: *Are you ready?*

Roger Holliss, St. Mary's General Hospital, Kitchener
Alan Pinkerton, PMG Systems Ltd., Toronto

Meet the presenters



Roger Holliss (P. Eng)

- Director of Engineering, Redevelopment, Bio-Medical Services, Parking & Security for St. Mary's General Hospital in Kitchener Ontario.
- Over the 18 years in healthcare, Roger has increased his contributions to both his hospital and healthcare engineering as he transitioned through a number of CHES roles including the CHES Ontario Chapter Chair to his current position as CHES National Vice President.
- As it relates to the CSA Medical Gas standard, Roger fulfills multiple roles as both an end user for St. Mary's, a representative of CHES on this standard and the technical sub-committee's vice chair for this standard. As such, he brings a number of perspectives to the unique CSA healthcare standard that is medical gases and piping systems.



Alan R. Pinkerton

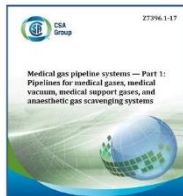
- President of Ontario based PMG Systems Ltd., est. 1988, and has specialized in Preventive Maintenance, Ongoing Verification, Training, Repairs and Retrofits of Medical Gas Pipeline Systems across Canada for thirty years.
- A technical subcommittee member on the CSA Medical Gas Standard Z7396.1, his experiences with failures and successes drive standards development to mitigate risks, sensibly.
- Participated in development of the first edition (2009) of CSA Z305.13, *Plume scavenging in surgical, diagnostic, therapeutic, and aesthetic settings*.
- Alan is also President and CEO of Radic8 Canada, specializing in advanced UV-C continuous Indoor Air purification/sterilization equipment.

Need to Know: New Edition Highlights



CSA Z7396.1-17

MEDICAL GAS PIPELINE SYSTEMS — PART 1: PIPELINES FOR MEDICAL GASES, MEDICAL VACUUM, MEDICAL SUPPORT GASES, AND ANAESTHETIC GAS SCAVENGING SYSTEMS



Sector: Health Care

2017, Edition 4

Available for purchase at:

<http://shop.csa.ca/medgaspipeline>

WHY IS THIS STANDARD NEEDED?

This fourth edition (2017) of CSA Z7396.1 is a foundation standard and installation code for medical gas systems within health care facilities. This fourth edition provides requirements to reflect Canadian practices and safety requirements for pipelines for medical gases, medical vacuum, medical support gases, and anaesthetic gas scavenging systems in health care facilities, both public and private.

This Standard assists to reduce and eliminate adverse incidents and injuries related to medical gas systems within health care facilities.

WHO IS THIS STANDARD INTENDED FOR?

This Standard is for anyone involved in the design, installation, commissioning testing, documentation, operation, and maintenance of pipelines for medical gases, medical vacuum, medical support gases, and anaesthetic gas scavenging systems. It applies to all facilities providing health care services, regardless of type, size, location, or range of services.

NEW EDITION HIGHLIGHTS

This edition sees expansion in requirements and guidance on

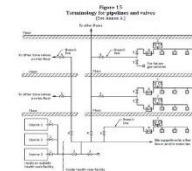
- maintenance;
- qualified person designations;
- oxygen concentrators;
- alarms and monitoring;
- quality of medical air made on-site;
- on-going verification;



- updated source diagrams;
- terminal unit distribution and flowrate charts; and
- new definitions.

And new informative, non-mandatory annexes for:

- medical gas pipe sizing;
- pipeline installation test reporting;
- emergency preparedness and response;
- emergency procedures;
- alternate solutions, environmental, fire control; and
- plume evacuation pipeline systems.



STANDARD OUTLINE

This Standard continues to provide comprehensive requirements, and informative commentary for:

- the design of systems to ensure the continuous supply of gas or vacuum in normal condition or single fault condition;
- the selection of materials and components;
- the non-interchangeability of equipment between different gas systems and services;
- the cleanliness of materials and components and of the completed system;
- installation procedures for supply systems and pipelines;
- the configuration of system components;
- control, monitoring, and alarm systems;
- the markings and information to be supplied by the manufacturer or installer;
- contaminant testing of pipelines;
- the final testing of each medical gas pipeline prior to its use in patient care; and
- maintenance and ongoing verification.

RELATED STANDARDS/ TRAINING PRODUCTS

CSA Z275.1 Hyperbaric facilities

CSA Z305.8 Medical Supply Units

CSA Z305.13 Plume scavenging in surgical, diagnostic, therapeutic, and aesthetic settings

CAN/CSA-Z1002 Occupational health and safety — Hazard identification and elimination and risk assessment and control

CAN/CSA-Z5359 Anaesthetic and respiratory equipment — Low-pressure hose assemblies for use with medical gases, medical vacuum, medical support gases, and anaesthetic gas scavenging systems

CSA Z8000 Canadian health care facilities

CAN/CSA-Z9170-1 Terminal units for medical gas pipeline systems - Part 1: Terminal units for use with compressed medical gases, vacuum, and anaesthetic gas scavenging systems

Training: Medical Gas Pipeline Systems - An Introduction to Medical Gases — Online

Training: Medical Gas Pipeline Systems II - Safety Requirements & Practical Applications

Training: Medical Gas Piping & Systems Installation Personnel Certification Program

CONTACT INFORMATION

Brian Haydon
178 Rexdale Boulevard
Toronto, ON M9W 1R3
brian.haydon@csagroup.org
(416) 747-4006



Our credo ...

Bad Gas
No Gas
Wrong Gas

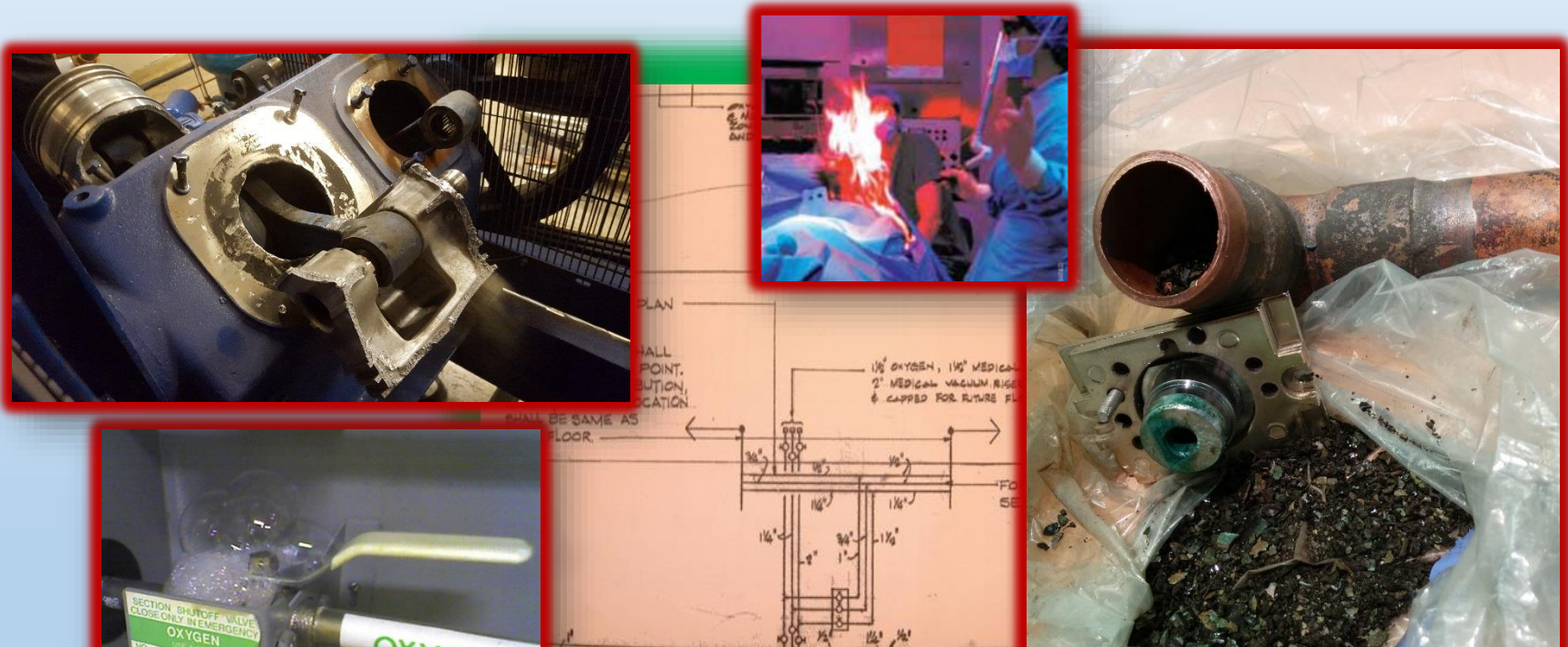


Definitions

- Prescriptive vs. Performance based
- Normative vs. Informative

Hazards vs. Risk

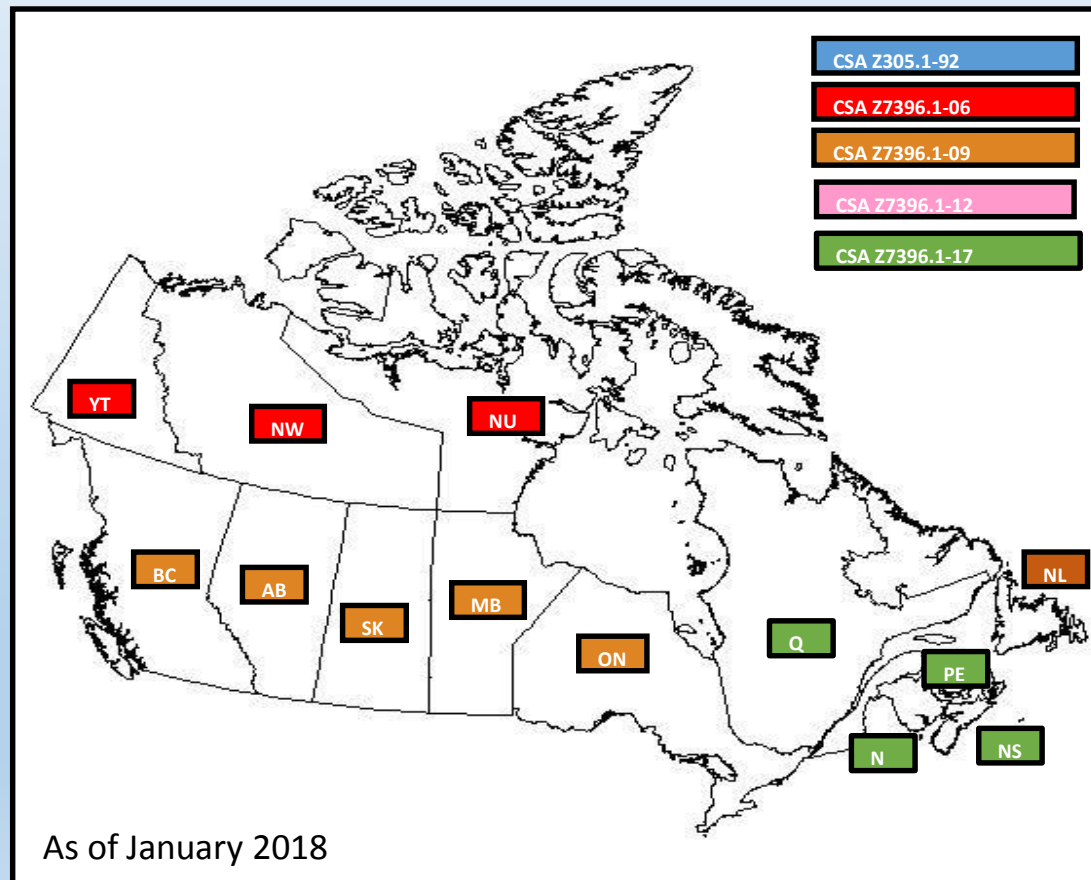
Risk - a combination of the probability of occurrence of harm, and the severity of that harm.



No.	Year	Prov	Reporter	Incident	Hazard(s)	Risk (L,M,H)	Severity (L,M,H)	Causes	Solutions, Input	Standard(s)	Impact to	WG(s)
-----	------	------	----------	----------	-----------	-----------------	---------------------	--------	------------------	-------------	-----------	-------

Regulatory vs Voluntary

- Who's the “AHJ” (authority having jurisdiction) in your province?





SCC Accreditation Programs



Standards Council of Canada
Conseil canadien des normes

Directory of Accredited Inspection Bodies for Medical Gas - Piping Systems

- DMS Medical Gas Systems, Oakville
- Flatland Inspection Services Ltd., Winnipeg
- RPC, Fredericton
- MW Biomedical Inspection Services Ltd., Edmonton
- Maxxam Analytics International Corporation, Burnaby

CAN/CSA Z305.1-92

Z7396.1-06

Z7396.1-09

Z7396.1-12

BNQ NQ5710-500/2000

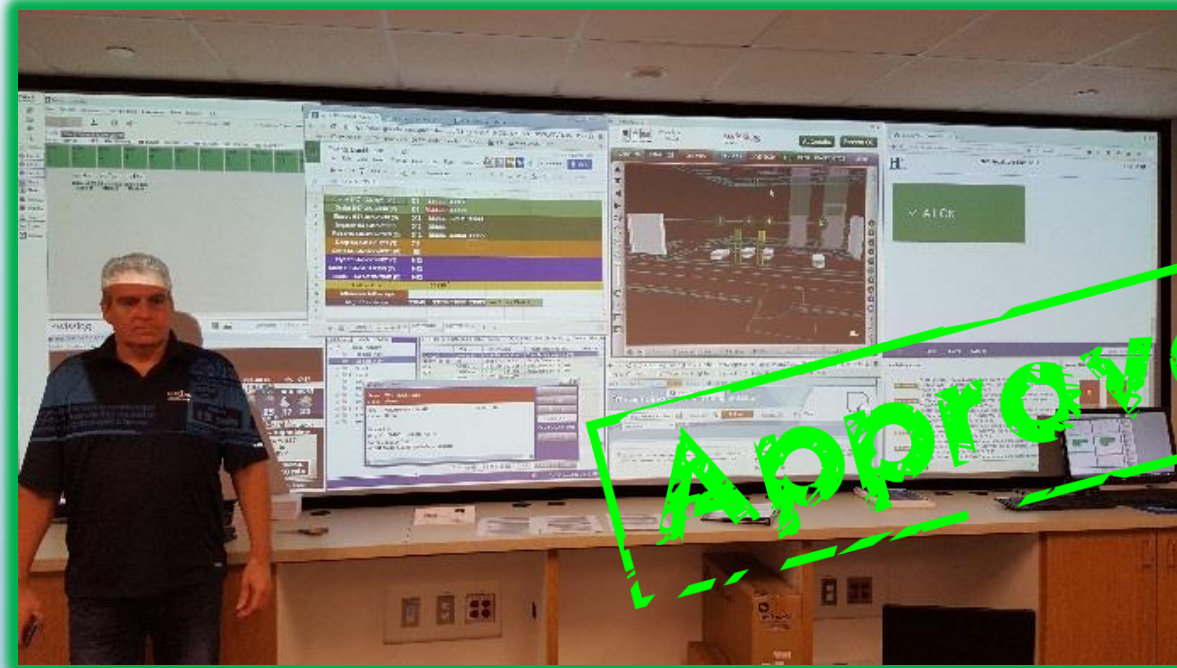
Need to Know: Section 5 - Medical air purity

5.5.2.2.5-7 (pg. 29)

- Potential hazards
- Different monitoring/control options available now
- Risk assessment (annex I)
- Continuous monitoring (annex S)
(informative)

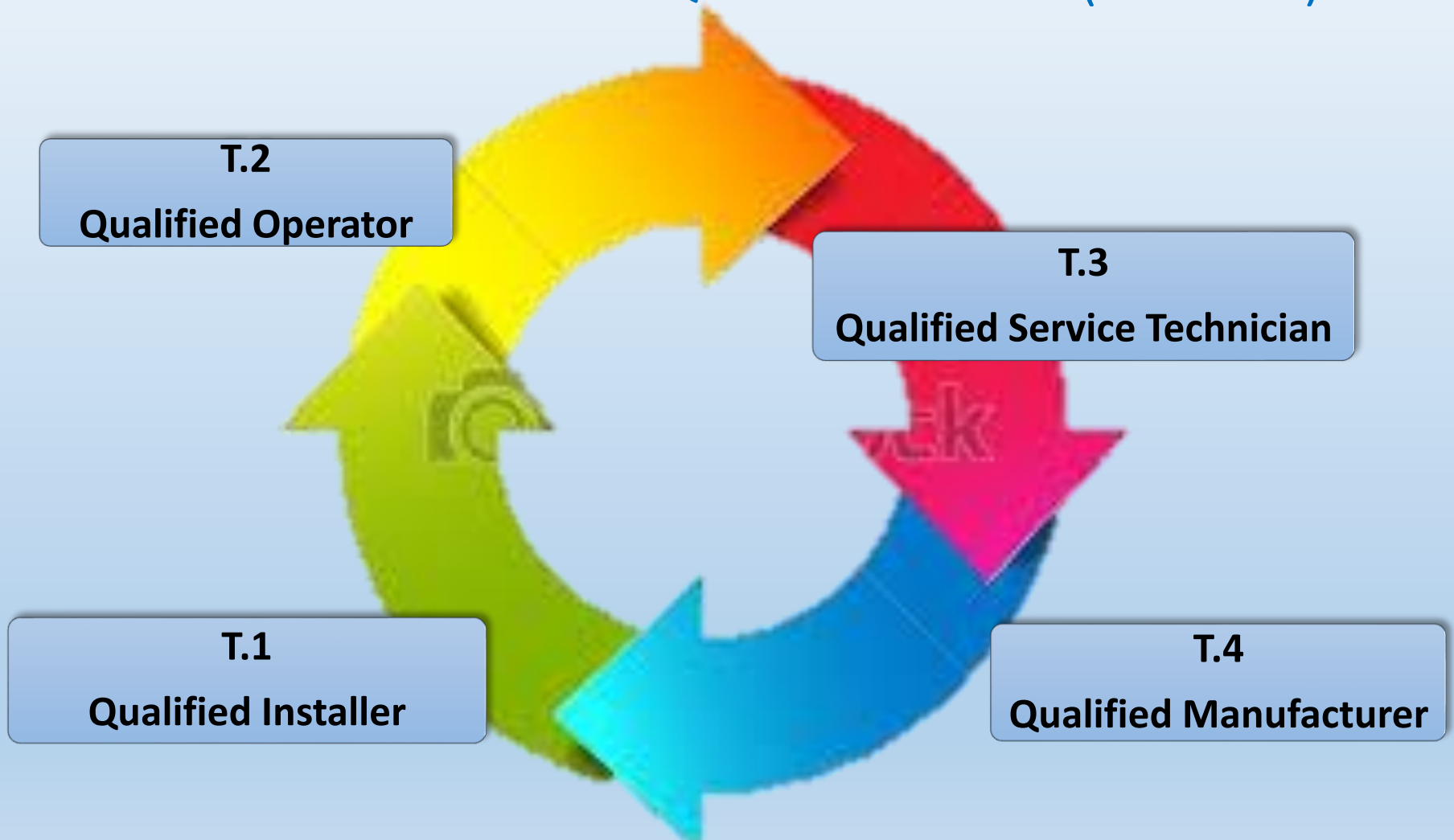


Need to Know: Section 6 - Alarm systems (normative)



A building management system (BMS) may be configured to generate the equivalent of a “supply system panel” at a responsibly surveilled location on site, or form the beginning of a remote supply system alarm panel.

Need to Know: Annex T Qualified Persons (normative)



Need to Know: Annex T1 -Qualified Installer(normative)



- **T.1 Qualified installer** (pg. 231)
- **T.1.1 Qualified Installer** (def'n.)
 - a competent person or company responsible for the installation of medical gas pipeline systems or components within a system.
- **T.1.2 General**
 - A qualified installer shall meet the requirements of Clause 11.4. (pg. 63)



Need to Know: Qualified Operator

Section 15 (generically) (pg. 75) &
Annex T.2.

- “Qualified Operator”- specific sections 15.1.2-5.
 - Basically you are the “go to” person

Need to Know: **Qualified Operator** (pg. 231)

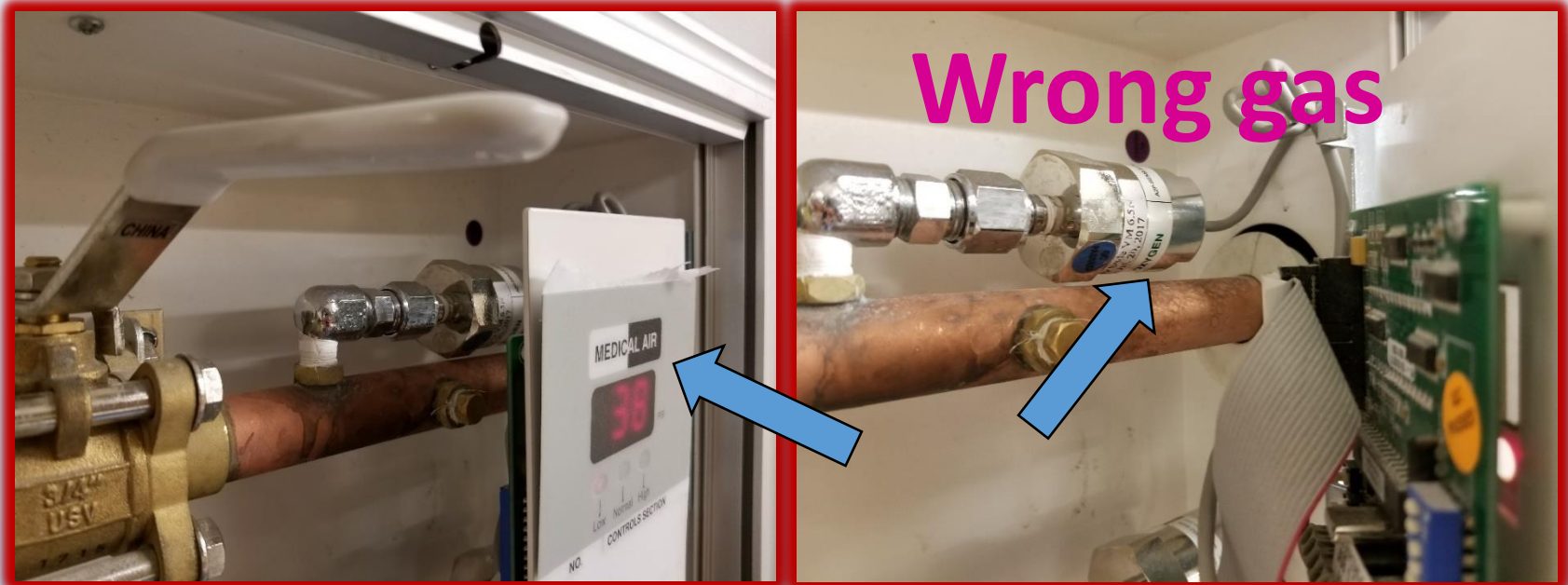
- **T.2.1 Definition,**
- **T.2.2 Professional Training & Educations,**
- **T.2.3 Knowledge,**
- **T.2.4 Experience and**
- **T.2.5 Roles & Responsibilities.**



Why do we need qualified people?



Why do we need qualified people?

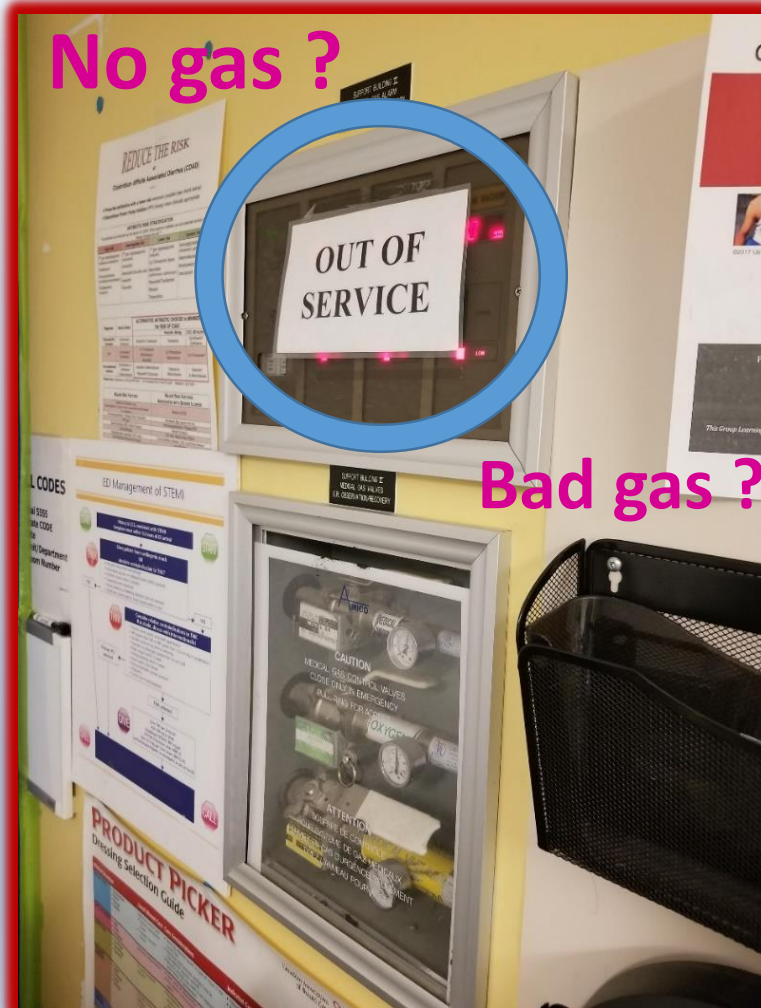


- Initial cross-connection between Oxygen & Medical Air valves found by IB.
- Installers' attempt to correct still leaves wrong gas DISS fittings on alarm sensor.

Why do we need qualified people?

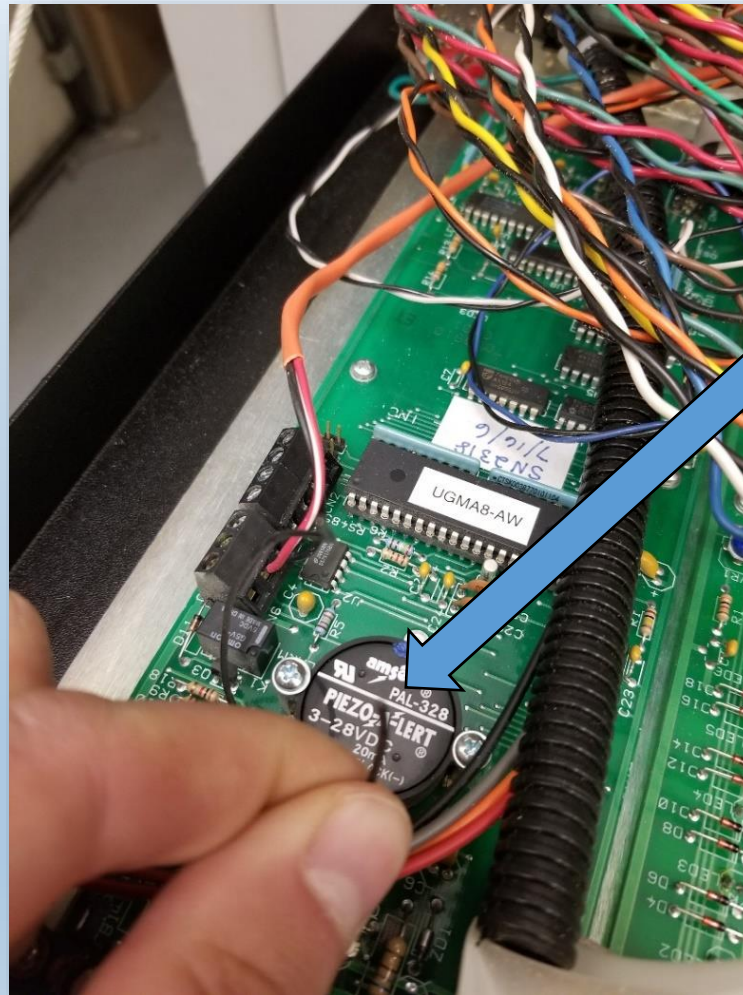


Why do we need qualified people?

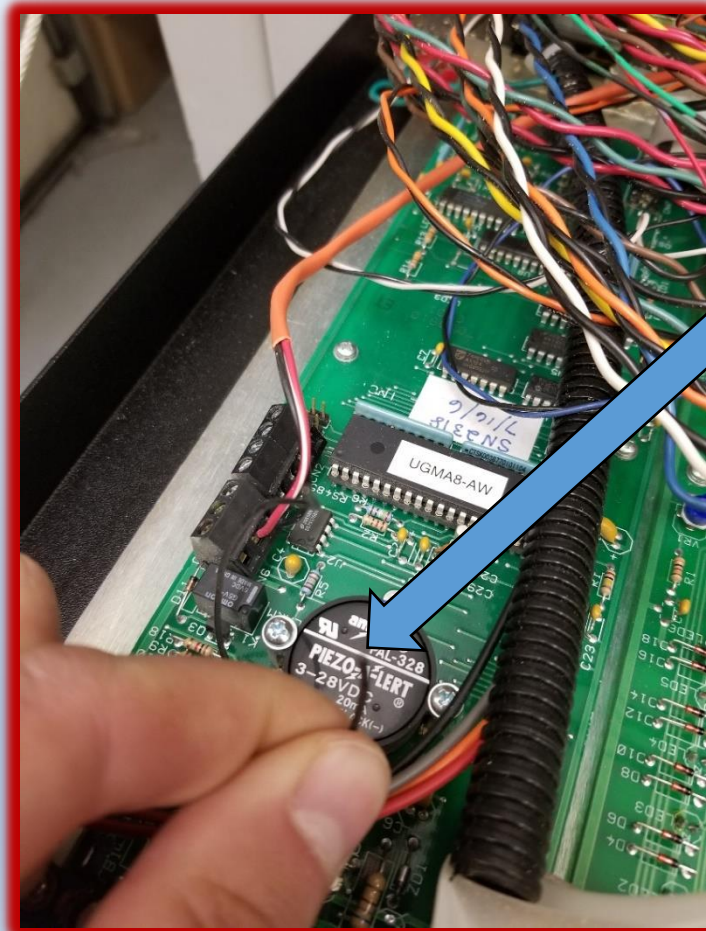


- *It was unknown how long this sign had been posted.*
- Must be tagged as per the standard if not repaired immediately
- Must also be documented & prioritized for remediation – not *forgotten*

Why do we need qualified people?



Why do we need qualified people?



- Alarm wire was cut because staff were annoyed with the constant alarm.

No gas ?



Need to Know: T.3 Qualified Service Technician

A competent person who through professional training and education, is qualified to service a medical gas system.

Professional training and education

A qualified service technician

- a) shall have general knowledge of this Standard, including detailed knowledge on relevant sections;
- b) shall complete the CSA course Medical Gas Pipeline Systems: An Introduction to Medical Gases;
- c) shall complete CSA course Medical Gas Pipeline Systems II - Safety Requirements & Practical Applications or equivalent;
- d) shall have product/system-specific training as appropriate
- e) shall have understanding of quality management systems, e.g., CAN/CSA-ISO 9001, etc.

T.3.3 Experience

Supervised on-the-job training sufficient to perform the work shall be assessed by a qualified person



Need to Know: T.4 Qualified Manufacturer

A person or company

- a) competent to sell a medical device or a medical gas system component under the person's or company's own name or under a trademark, design, trade name, or other name or mark owned or controlled by the person or company;
- b) competent to design, manufacture, assemble, process, label, package, refurbish, or modify a device or component or for assigning a purpose to the device or component, whether those tasks are performed by that person or company or by others on the person's or company's behalf; and
- c) that has knowledge and experience with devices or components intended for medical gas systems

Training/Course


- Background:
 - Relationship b/n. CHES Nat'l. & CSA
- Current training:
 - Med Gas 1 (on-line)
 - Med Gas 2 (face-to-face)





Training/Courses (con'd.)

- Background:
 - Relationship btn. CHES Nat'l. & CSA
- 2018 +training

Qualified Manufacturer	Qualified Installer	Qualified Operator	Qualified Serv. Technicians	General?/ Awareness?/
<ul style="list-style-type: none"> • Deferred • Does it require a trng. Package? 	In place 	<ul style="list-style-type: none"> • In development • US version? 	<ul style="list-style-type: none"> • In development • US version? 	Upgrade on-line?

Need to Know: Section 15 Maintenance (normative)

- Specifies minimum requirements for testing, monitoring, operating, inspecting, maintaining, and recording the condition and performance of medical gas pipeline systems with the objective of ensuring that they continue to conform to the requirements of this Standard and to function reliably.



I suspect we have leaks...



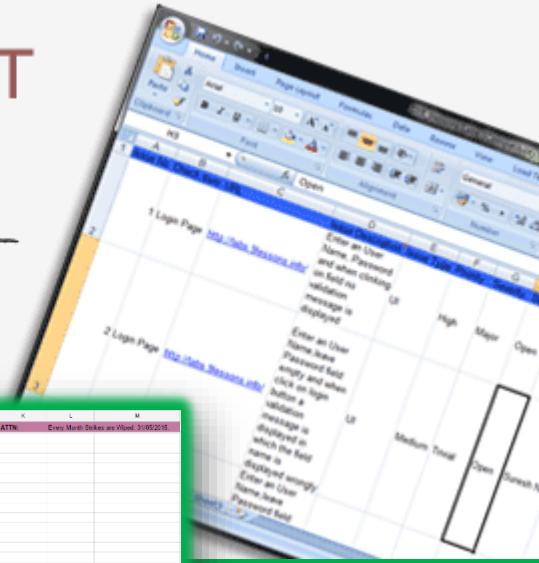


15.1.3 Documentation



TEST REPORT

Spreadsheet



Task Type	Task Price	Lead Time
Alarm	95.00	1 week
Line	25.00	1 month
Box	800.00	3 months
Pipe	25.00	1 month

m d n s f f o g g
 g c n s t d b s t
 h o y n m a b u r y
 g o d l e s t o r y
 u l k y s u n n y
 a v j p m u w n g e
 x w i o q c f k e
 n r w a r m p h

Case Number	Office Name	Order #	Deployment	Bank	Case Links	Notes	Date of Notes / News / Publication	IA Name	Case Status	ATN	Case Month Status as of 03/15/2018
39	A. Mann	147	SC019	SGT	39	na	#Revision Deleted Google Doc Access	#Revision	Closed		
40	A. Goveas	187	CMS	CGT	40	na	#3 Day Extension #0000	#0000	Closed		
41	X. Shide	875	DOC	BCI	41	na	#Waste Case Closed #1 Done	#0000	Closed		
42	V. Marlow	809	DOC	CH	42	na	#Waste Vial Cleaning #1 Done	#0000	Closed		
43	J. Chan	922	SC019	CGT	43	na	Case #0000	#0000	Closed		
44	B. Matthews	954	SC019	SGT	44	na	BANNED FROM PG - #0000	#0000	Closed		
45	H. Cow	108	SPD	SGT	45	na	#0000	#0000	Closed		
46	B. Johnson	110	DOC	CH	46	na	#0000	#0000	Closed		
47	L. Smith	151	CMS	SGT	47	na	#0000	#0000	Closed		
48	A. Tates	162	SPD	CH	48	na	#Waste Case Closed #1 Done	#0000	Closed		
49	D. Morgan	679	EWAT	LI	49	na	#Waste Case Closed #1 Done	#0000	Closed		
50	J. Wolf / J. Smith	232711	SPD	SGT	50	na	#0000	#0000	Closed		
51	M. Wilson	164	CMS	SGT	51	na	#0000	#0000	Closed		
52	J. Bruchard	196	SPD	CGT	52	na	#Revision Case Closed LACK OF EVIDENCE	#Revision	Closed		
53	L. Smith	301	CMS	SGT	53	na	#Waste #0000 In error amendment will be added	#0000	Closed		
54	D. Matthews / J. Chan	305	CMS	SGT	54	2	#Waste #0000 #0000 #0000	#0000	Closed		
55	M. Marlow	317	SPD	CH	55	na	2 week suspension	#0000	Closed		
56	M. Goveas	318	DOC	BCI	56	na	No action towards corrected #0000	#0000	Closed		
57	L. Goveas	318	DOC	BCI	57	na	No action towards corrected #0000	#0000	Closed		
58	J. Chan	396	DOC	Waste	58	na	#0000	#0000	Closed		
59	J. Chan	396	CMS	SGT	59	na	CLOSED BY COMMAND #0000	#0000	Closed		
60	D. Matthews	309	SC019	SGT	60	na	#Waste Case Closed	#0000	Closed		
61	D. Matthews / Chan	309333	News	SGT	61	na	News updated and #0000 #0000	#0000	Closed		
62	J. Chan	356	DOC	CGT	62	na	#Waste #0000 #0000	#0000	Closed		
63	J. Wolf	305	SPD	CH	63	na	#Waste	#0000	Closed		
64	A. Tates	318	SPD	NA	64	na	#Waste #0000 #0000 #0000	#0000	Closed		
65	A. Tates	396	DOC	CH	65	na	#Waste #0000 #0000 #0000	#0000	Closed		
66	J. Chan	396	SPD	CH	66	na	#Waste #0000 #0000 #0000	#0000	Closed		
67	A. Williams	306	SPD	LI	67	na	#Waste Case Closed #0000	#0000	Closed		
68	J. Marlow / Pickles	993	SPD	SGT	68	na	#Waste Case Closed #0000	#0000	Open		
69	T. France	222	DOC	SGT	69	na	#Waste Case Closed	#0000	Open		
70	J. France	232	DOC	SGT	70	na	#Waste Case Closed	#0000	Open		
71	J. France	232	DOC	SGT	71	na	#Waste Case Closed	#0000	Open		
72	J. France	448	DOC	CH	72	na	#Waste Case Closed	#0000	Open		
73	M. Wilson	810	CMS	CH	73	na	#Waste Case Closed	#0000	Open		
74	J. Marlow	240	DOC	CH	74	na	Good one #0000 #0000	#0000	Open		
75	A. Mann	307	SPD	SGT	75	na	#Waste Case Closed	#0000	Open		



stormy
foggy

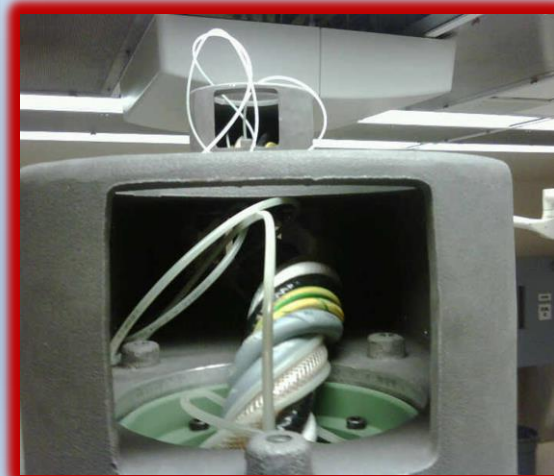


Case #	Equipment	Issue	Priority	Status	Assigned To	Due Date	Lead Time
15	MEC	Planned annual board	1	Open	MEC	21-09-2018	1 month
16	MEC	Planned annual board	1	Open	MEC	21-09-2018	1 month
17	MEC	Planned annual board	1	Open	MEC	21-09-2018	1 month
18	MEC	Planned annual board	1	Open	MEC	21-09-2018	1 month
19	MEC	Planned annual board	1	Open	MEC	21-09-2018	1 month
20	MEC	Planned annual board	1	Open	MEC	21-09-2018	1 month
21	MEC	Planned annual board	1	Open	MEC	21-09-2018	1 month
22	MEC	Planned annual board	1	Open	MEC	21-09-2018	1 month
23	MEC	Planned annual board	1	Open	MEC	21-09-2018	1 month
24	MEC	Planned annual board	1	Open	MEC	21-09-2018	1 month

15.1.4 Repair or replace



Don't mess with others safety



15.2.3.1 Terminal units

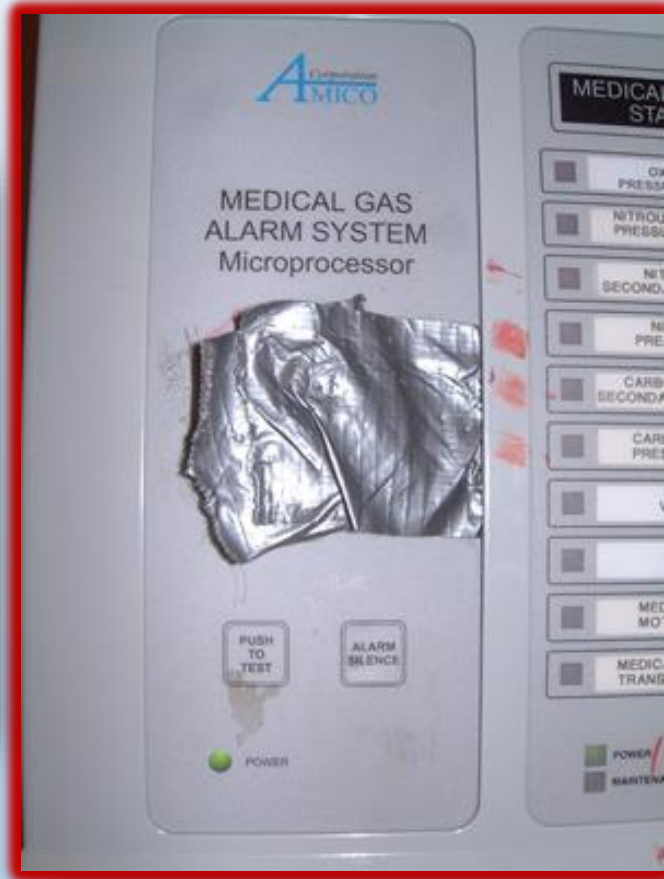
Terminal units shall be tested in accordance with Clause D.6.5 and at least annually for function, wear, and mechanical performance



15.2.3.2 Zone Valves

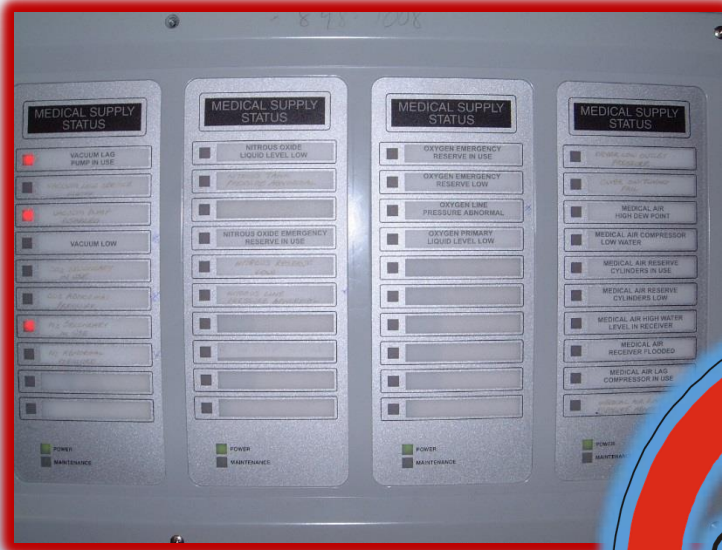


15.2.2 / 15.2.3.3 Alarms



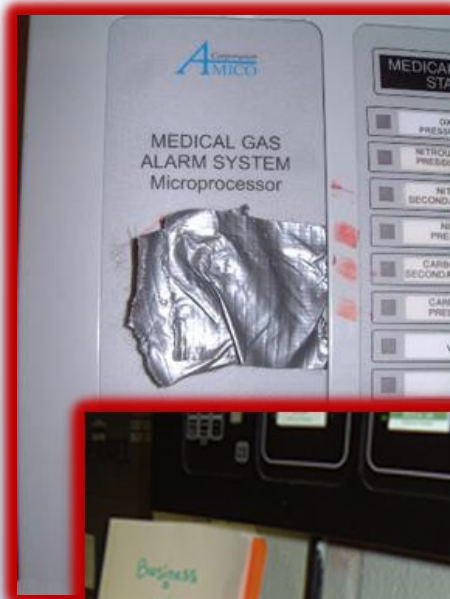
CSA Z7396.1-17 – Medical Gas Pipeline Systems

2018 CHES Webinar



CSA Z7396.1-17 – Medical Gas Pipeline Systems

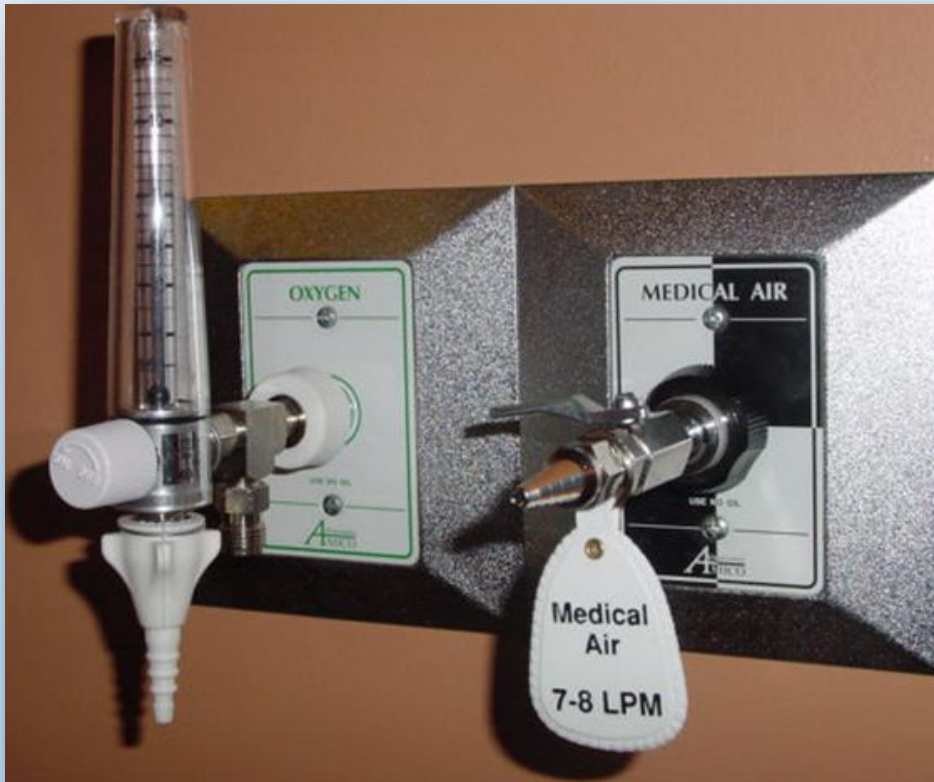
2018 CHES Webinar



Oxygen / Medical Air Misconnects



Some solutions



AGSS





Need to Know: Annex J Maintenance Audit (normative)

Medical gas pipeline systems — Part 1: Pipelines for medical gases, medical vacuum, medical support gases, and anaesthetic gas scavenging systems

Z7396.1-17

Figure J.1
Example of a medical gas maintenance and ongoing verification compliance form
(See Clause J.2.)

Facility name:		Date of audit:	
Address:		Auditor name/ title:	
Qualified operator(s):		Audit organization:	
Jointly evaluate 25 requirements through assigning a score on a scale from 0 to 4. Comments may be added below each question. Total the score for each part. At the end, add the totals for a percentage score out of 100.			
Part 1/4: 15.1 General		Score:	0-4
1. (15.1.2) Qualified operator(s) have been designated by administrator <i>Comments:</i>			
2. (15.1.2.2, 15.1.2.3) Maintenance program implemented, qualified service technicians designated <i>Comments:</i>			
3. (15.1.2.4) Components are sourced from qualified manufacturers <i>Comments:</i>			
4. (15.1.2.5) Only qualified installers are permitted to install medical gas pipeline systems <i>Comments:</i>			
5. (15.1.3) The results of the maintenance program are documented and retained according to policy <i>Comments:</i>			
6. (15.1.4, 15.1.5) Defective components are repaired or tagged immediately with ongoing follow up <i>Comments:</i>			
7. (15.1.6) It has been three years or less since your last audit (four for first/recurrent, 0 if beyond 37 months) <i>Comments:</i>			
8. (15.1.7) Audit/verification documents are completed, retained, and accessible <i>Comments:</i>			
Part 1 total (out of 32):			
Part 2/4: 15.2.1 Supply systems and control equipment		Score:	0-4
9. (15.2.1.1) Each pipeline pressure shall be observed and recorded at least once per day <i>Comments:</i>			
10. (15.2.1.2) Supply systems and control equipment are verified at least every six months as specified <i>Comments:</i>			
11. (15.2.1.2) Stationary liquid (bulk) supply systems are also verified at least every 6 months as specified			

(Continued)

July 2017 205

Medical gas pipeline systems — Part 1: Pipelines for medical gases, medical vacuum, medical support gases, and anaesthetic gas scavenging systems

Z7396.1-17

Figure J.1 (Continued)

<i>Comments:</i>			
12. (15.2.1.3) Supply systems and their environment shall be inspected annually as specified <i>Comments:</i>			
13. (15.2.1.4) Verification of gas identity and pipeline minor component testing/frequency as specified <i>Comments:</i>			
14. (15.2.1.5) Compressors, pumps, drying, and purification units service/frequency as specified <i>Comments:</i>			
15. (15.2.1.6) Pressure relief valves replaced at least every five years as specified in CSA B51 <i>Comments:</i>			
Part 2 total (out of 28):			
Part 3/4: 15.2.2 Supply system alarm panels		Score:	0-4
16. (15.2.2.1 a)) Legends verified to meet the requirements of Clause 6.2.4.3.1 and Tables 3 and 4 every six months <i>Comments:</i>			
17. (15.2.2.1 b)) System Integrity testing from designated demarcation points every six months as specified <i>Comments:</i>			
18. (15.2.2.1 d)) Alarms for stationary liquid (bulk) supply systems are verified every six months as specified <i>Comments:</i>			
19. (15.2.2.2 a)) Full alarm panel/signal testing from all sensors/switches every 12 months as specified <i>Comments:</i>			
20. (15.2.2.2 b/c)) All calibrations including main pipeline "abnormal" verified every 12 months as specified <i>Comments:</i>			
Part 3 total (out of 20)			
Part 4/4: 15.2.3 Pipeline distribution system		Score:	0-4
21. (15.2.3.1) Terminal units verified annually for performance, wear, and mechanical function <i>Comments:</i>			
22. (15.2.3.2) Zone valves verified annually for compliance, leakage, and signage as specified <i>Comments:</i>			
23. (15.2.3.2.2) Zone valves, every five years for internal leakage (documented standing pressure tests) <i>Comments:</i>			
24. (15.2.3.3 a)) Zone alarm panels integrity (self-test) and labelling verified 6 months as specified <i>Comments:</i>			
25. (15.2.3.3 b)) Zone alarm calibrations and all sensor "low" activations verified annually as specified <i>Comments:</i>			

(Continued)

July 2017 206

Need to Know: Annex J Maintenance Audit (normative)

Medical gas pipeline systems — Part 1: Pipelines for medical gases, medical vacuum, medical support gases, and anaesthetic gas scavenging systems

Z7396.1-17

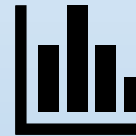
Figure J.1 (Concluded)

Part 4 total (out of 20)	
Results	
Part 1 total (out of 32)	
Part 2 total (out of 28)	
Part 3 total (out of 20)	
Part 4 total (out of 20)	
Overall Score	
General Comments:	

July 2017 207



Highlights and tracks weaknesses and operating concerns



Intended to indicate a level of compliance that can be viewed and readily interpreted within an Accreditation Canada "Qmentum" program evaluation



Failure to complete increases risk through potential unawareness



Failure to provide proof with acceptability of the last verification audit results can delay or prevent certification of future projects by an inspection body



Need to Know: Annex J Maintenance Audit (normative)

15. (15.2.1.6) Pressure relief valves replaced at least every five years as specified in CSA B51 <i>Comments:</i>	
Part 2 total (out of 28):	
Part 3/4: 15.2.2 Supply system alarm panels	Score: 0-4
16. (15.2.2.1 a)) Legends verified to meet the requirements of Clause 6.2.4.3.1 and Tables 3 and 4 every six months <i>Comments:</i>	
17. (15.2.2.1 b)) System integrity testing from designated demarcation points every six months as specified <i>Comments:</i>	
18. (15.2.2.1 d)) Alarms for stationary liquid (bulk) supply systems are verified every six months as specified <i>Comments:</i>	
19. (15.2.2.2 a)) Full alarm panel/signal testing from all sensors/switches every 12 months as specified <i>Comments:</i>	
20. (15.2.2.2 b)/c)) All calibrations including main pipeline "abnormal" verified every 12 months as specified <i>Comments:</i>	
Part 3 total (out of 20)	
Part 4/4: 15.2.3 Pipeline distribution system	Score 0-4
21. (15.2.3.1) Terminal units verified annually for performance, wear, and mechanical function <i>Comments:</i>	
22. (15.2.3.2) Zero valves verified annually for compliance, leakage, and rigging as specified	



Good to Know: Annex A

“Rationale and commentary on clauses in this Standard” (pg. 106)

- *Now offers 33 linked pages full of wisdom and guidance*
- *‘Very’ Informative*



Good to Know: **New pipe sizing guidance**

Annex E (informative)

“Medical gas pipe sizing” (pg. 167)

- Flow and diversity charts
- Riser distribution diagrams providing new options

Annex F (informative)

“Suggested terminal unit distribution chart” (pg. 185)

- Table F.1 Reference list of health care facility areas and rooms from CSA Z8000
- Table F.2 Highly detailed terminal unit distribution charts



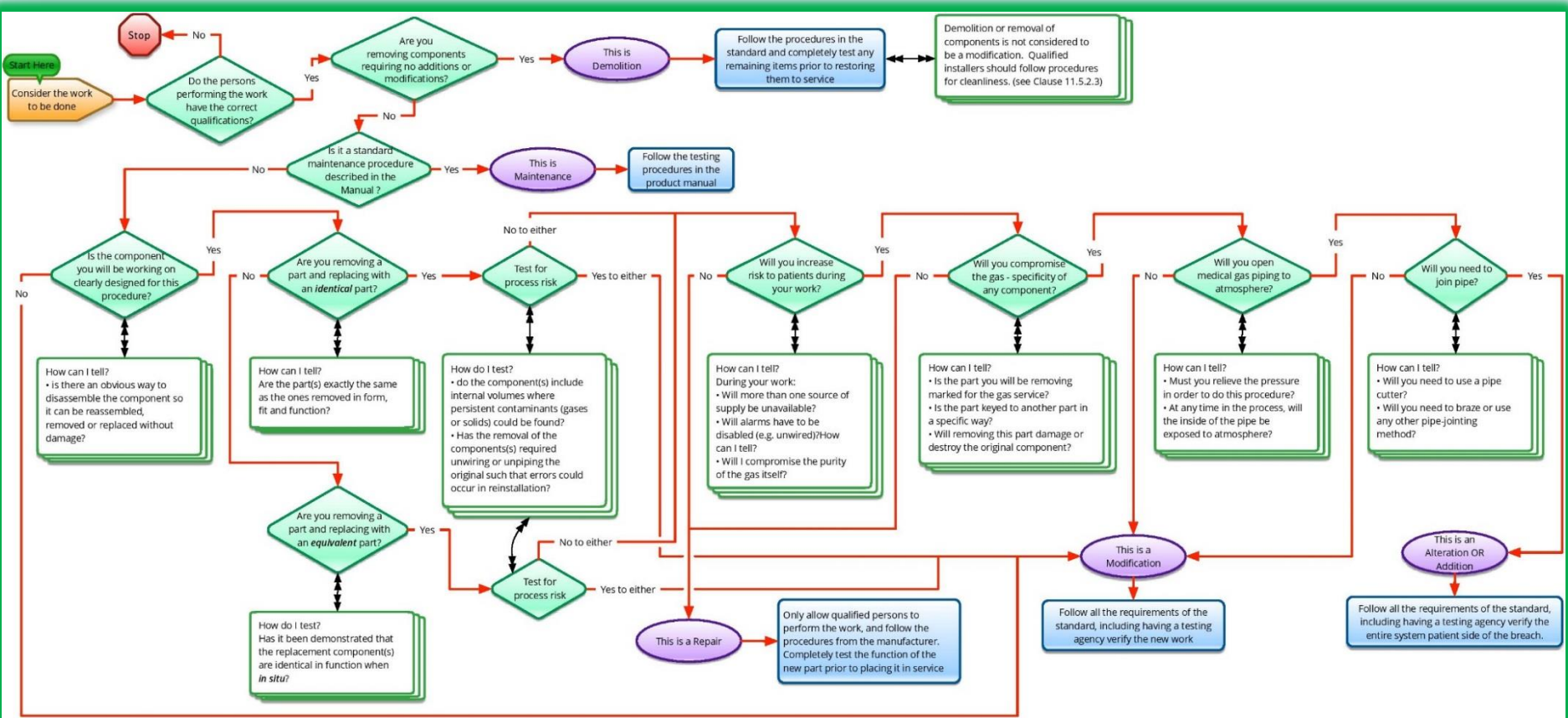
Need to Know: Annex G - Zone valves (normative)

- No change from the 2012 version



Need to Know: Annex I Flowchart (normative)

Maintenance, repair, modification, and additions





Good to Know: Annex K

“Medical gas piping system provisional inspection report” (pg. 208)

- Informative
- Temporary approval





Good to Know: Annex L

“Pipeline installation test report” (pg. 209)

- Informative
- Part of commissioning

Medical gas pipeline systems — Part 1: Pipelines for medical gases, medical vacuum, medical suction gases and anaesthetic gas
serving systems

TABLE 17

Annex L (informative)
Pipeline installation test report

Note: This Annex is not a mandatory part of this Standard.

Figure L.1
Pipeline installation test report
(see Clause 11.4.1.4.)

Health care facility:		Area/Room:
Medical gas installation report		
Task	Action required	Complete
18-hour standing pressure test as per Clause 9.2.3	Provide test report	
Perform final leak test as per Clause 9.1.3	Verify performed	
Verify terminal units as per Clause 9.3.4	Verify performed	
Perform ozone concentration test as per Clause 9.3	Verify performed	
Perform particulate filter test as per Clause 9.4	Verify performed	
CSE medical gas piping & installation personnel certification number (Each installer individual number to be submitted) As per Clause 11.4.1.2	1	
	2	
	3	
	4	
	5	
Billing/qualifier license number (Each installer individual license to be submitted) As per Clause 11.4.1.3	1	
	2	
	3	
	4	
	5	
Quality assurance program certification number as per Clause 11.4.1.4		
Installer:	Date:	
Witnessed by:		
Notes:		

Note: As per Clause 11.3, all of the above tests must be performed and a copy of this form is to be submitted to the health care facility before the inspection body commences re-commissioning.

July 2017 209

Committee Member's Copy Only. Distribution Prohibited.

Good to Know: Emergency Preparedness

- *Informative (annexes H, M & N)*
- Annex “M”
 “Emergency Preparedness & Response” (pg. 210)
- Annex “N”
 “Guideline for Emergency Procedures” (pg. 212)
- Annex “H”
 “Suggestions Protocols for Managing Gas Pipelines” (pg. 198)



Good to Know: Annex “O” - Alternate solutions

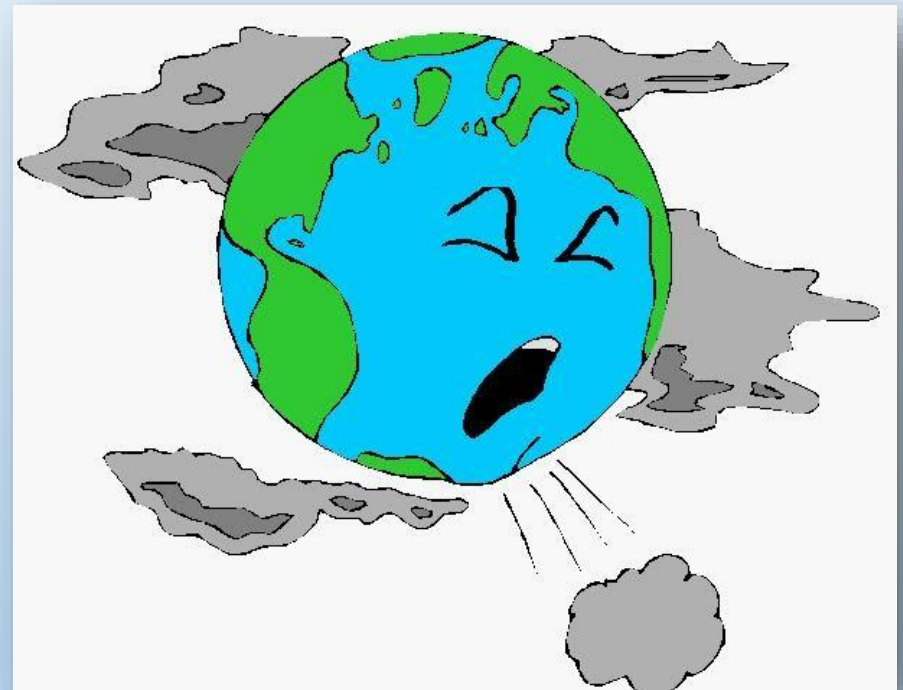
- *Informative* (pg. 216)
- Performance- based
- More control & responsibility
- Risk Assessment (Annex I)



Good to Know: Annex P – Environmental

- *Informative* (pg. 217)
- N₂O is regarded as the predominant greenhouse gas for the 21st century
- Inhalation anaesthetics, Energy and Water

Save our planet!



Good to Know: Annex Q - Fire Control



- *Informative* (pg. 219)
- Oxygen
- Major US fires
 - <https://www.nfpa.org/.../occupancies/oshospitalfires.pdf?la=en>

Good to Know: **New Annex R – Plume Evacuation**

- *Informative* (pg. 220)
- Applicable to plume evacuation systems connected to medical gas pipeline distribution systems
 - Z305.13-13 - Plume scavenging in surgical, diagnostic, therapeutic, and aesthetic settings (32 pages)
 - CAN/CSA-ISO 16571:16 - Systems for evacuation of plume generated by medical devices (Adopted ISO 16571:2014, first edition, 2014-03-15)



Good to Know: Annex S-Site manufacturing

- *Informative* (pg. 227)
- *“Manufacture of Medical Gas onsite- Responsibility for Medical Gas Purity”*
- Associated with 5.5.2.1.5
- Linked to Annex “I” Risk



... trends & next steps for 2022

Trends:

- ↓ Nitrous oxide pipelines
- ↑ Advanced O2 concentrator technology = more options
- ↑ Site-specific risk assessments in accordance
- ↑ AGSS'
- ↑ Compressor-based instrument air systems replacing N2



Next Steps for '22:

- More performance –based vs. prescriptive stds. for non high-high's
- Continued refinement of qualified persons training
- Tri –Year audit improvements
- Assessing/addressing known mis-uses of gases.

CSA Z7396.1-17 – Medical Gas Pipeline Systems
2018 CHES Webinar



*Thank
you!*