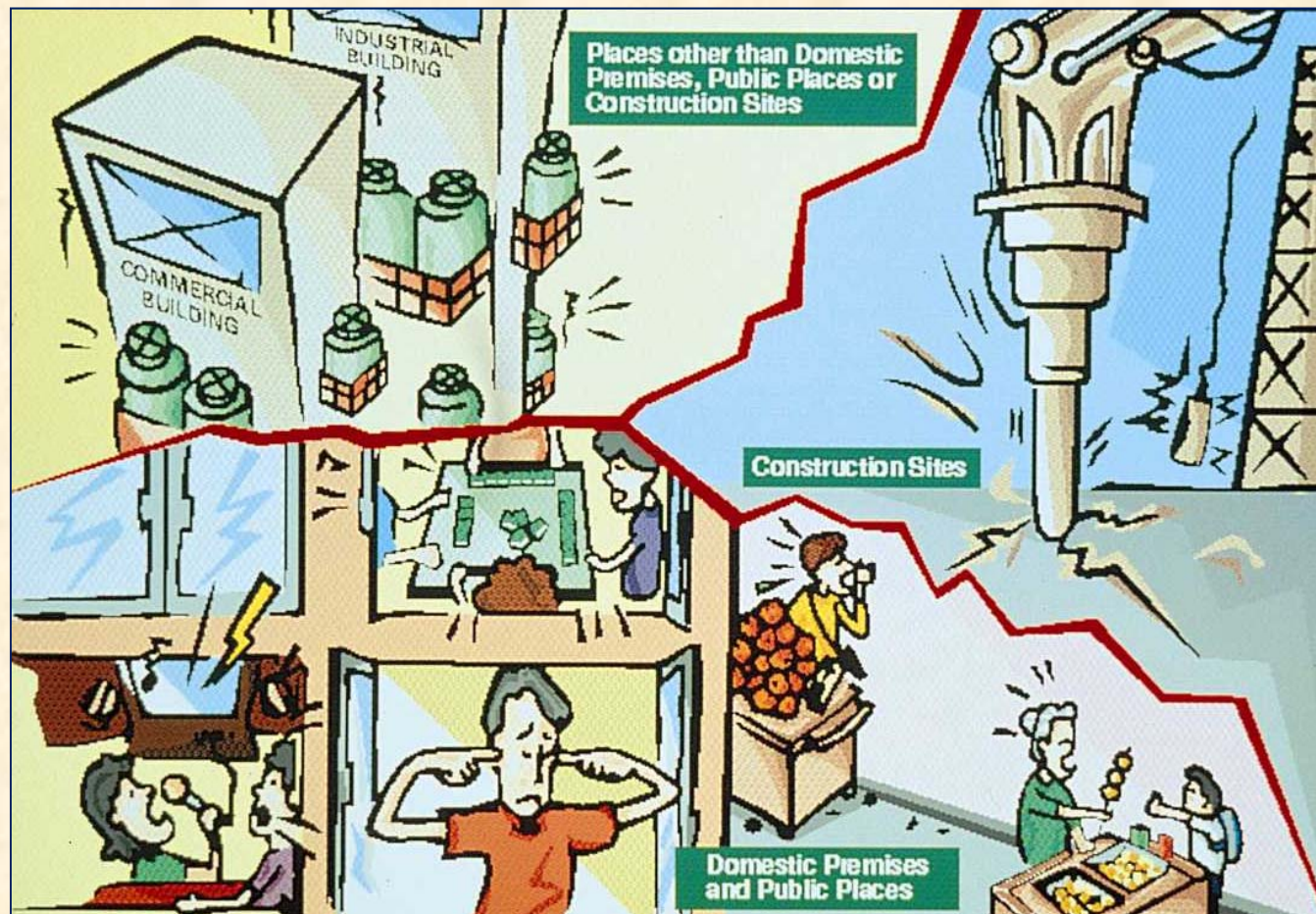


Green Compliance

Noise Control Ordinance (Cap. 400)

Ir C.F. LAM

Environmental Noise



Noise from Domestic Premises



Noise from Public Places





Noise from Percussive Piling



Noise from General Construction Work





Noise from Industrial Premises





Noise from Commercial Premises



Noise from Intruder Alarm Systems

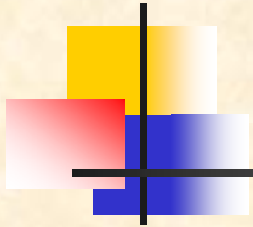


- ◆ Intruder alarm system in **premises**
- ◆ Intruder alarm system of **vehicles**



Noise from Public Entertainment (open venue)





Noise from Air Traffic



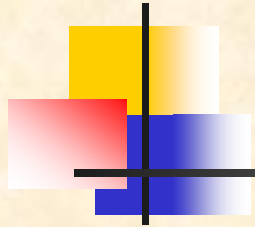
Noise from Railway





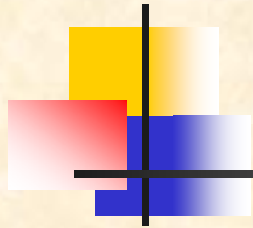
Noise from Road Traffic





Noise Control Ordinance

Overview of Noise Control Ordinance (Cap. 400)



Objectives of NCO

- Prevention, minimizing and abatement of noise
- Appointment of a Noise Control Authority
- The powers and duties of the Noise Control Authority relating to the control of noise
- The creation of offences; and for connected purposes



Noise Annoyance



Annoyance that would not be tolerated by a reasonable person



Noise Controlled under NCO

Noise Sources	Complaints to be Handled by
Domestic premises and public places	Local police stations (for immediate follow-up actions)
Percussive piling	
General construction work in evening/night time or at any time on general holiday, including Sunday	EPD
Intruder alarm systems	



Noise Controlled under NCO

Noise Sources	Complaints to be Handled by
Industrial/commercial premises including railway, and airport (ground noise only); Prescribed products	EPD
Places of public entertainment	Local Police (for immediate follow-up actions) ; EPD
Individual vehicles	Transport Department



Noise NOT Controlled under NCO

Noise Sources		Complaints to be Handled by
General construction work in <u>daytime</u> on any day other than general holiday	Designated projects under EIAO	EPD
	Other projects	Building management office (renovation work) EPD (for difficult complainant)



Noise NOT Controlled under NCO

Noise Sources	Complaints to be Handled by
Road traffic	HyD (uneven road surfaces) TD (road traffic management) EPD (general road traffic noise / retrofitted measures)
Air traffic including helicopter flights	CAD
Occupational Noise	Labour Dept



Noise from Domestic Premises and Public Places (S.4)

Nighttime (2300 to 0700 hrs.) or any time on General Holiday (including Sunday)

Any person

Owner, tenant, occupier or person in charge of

Domestic premises or public place

Domestic premises

Makes or causes to be made

Knowingly permits or suffers

Noise which is a source of annoyance to any person

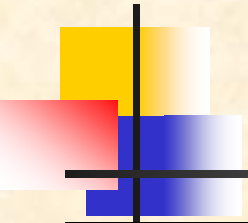
To emanate from the premises

Fine of \$10,000



Noise from Domestic Premises and Public Places (S.5)

Any person at any time in:	
Domestic premises	Public places
Musical instrument, record/cassette player, radio, TV, loudspeaker, game or pastime, trade or business	
A/C or ventilating system, animal or bird	Attracting attention to goods, wares or trade (at or near public place)
Makes noise which is source of annoyance to any person	
Fine of \$10,000	



Noise from Commercial & Industrial Sources (S.13A or S.13B)

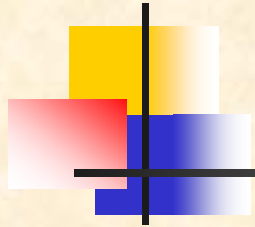
(Example: Alarm Systems)

Any Person who controls	Any registered owner
Premises	Vehicle
	Emit audible signal caused otherwise than by act of direct physical contact; or
Fails to provide automatic device to cause audible signal to cease within	
15 minutes	5 minutes
Subject to fine of \$10,000 & imprisonment of 3 months	Subject to fine of \$10,000



Defence under NCO

- Exemption, authorized by licence or permit
- Prevent injury to or saving life of person
- Prevent unforeseeable damage to property
- Prevent unforeseeable interruption or disruption to public transport system



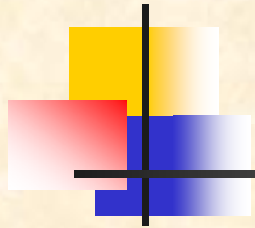
Enforcement Approach

- Annoyance, subject assessment
- Reasonable man
- No noise measuring equipment used



Noise Abatement Notice (NAN)

- ◆ Served on:
 - person making noise or causing or permitting noise to be made; or
 - owner, tenant, occupier or person in charge of noise source
- ◆ Priority – Owner (OC), management company
- ◆ Not perpetual – discharge by compliance



Issue of NAN

S.13(1)(a) – for noise which is a source of
annoyance

S.13(1)(c) – for noise which does not comply
with TM standard/limit



General Requirements in NAN

- ◆ **Time period for carrying out noise abatement work (“grace period”)**
 - Effective after 28 days from date of issue of NAN (7 days for delivery + 21 days for appeal)
 - Specified having regard to nature, difficulty and complexity of noise abatement work
 - Normally 30 days
- ◆ **Subsequent “maintenance period”**
 - Normally 6 months (to cater for summer and winter modes of air-conditioning systems)



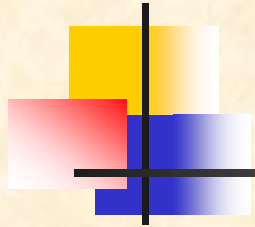
Compliance Check

1. 2nd check conducted (written warning 1 month before the check) only after result of 1st prosecution available
2. Discharge by any compliance found in "maintenance period"
3. After expiry of "maintenance period", NAN invalid once compliance found



Failure to Comply with Requirements in NAN

- ◆ Fine of \$100,000 on 1st conviction
- ◆ Fine of \$200,000 on subsequent conviction
- ◆ Daily fine of \$20,000



Noise Control Ordinance

Causes of Industrial and Commercial Noise Problems



Common Sources of Noise

◆ Ventilating systems

- Ventilating fan
- Cooling tower
- Chiller





Common Sources of Noise

◆ Pumping systems

- Pumps
- Piping





Causes of Noise Problems

◆ Source

- too near dwellings
- defective
- without mitigation measures



Environmental Facilities: Noise Control

○ Noise barrier



Environmental Facilities: Noise Control

○ Noise Enclosure



Environmental Facilities: Noise Control

○ Noise muffler





Mitigation Measures for Industrial and Commercial Noise

- ◆ At sources
- ◆ At paths
- ◆ At receivers

Noise Mitigation Measures at Sources

- ◆ Include **quiet equipment**, e.g. screw compressors in lieu of reciprocating compressors for chillers



Reciprocating compressor



Screw compressor

Noise Mitigation Measures at Sources

- ◆ Also include **modification of equipment**, e.g. enclosing noisy components with noise panels



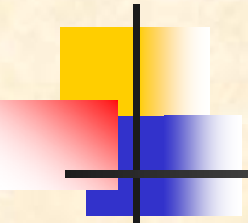
Compressors enclosed with noise panels



Noise Mitigation Measures at Sources

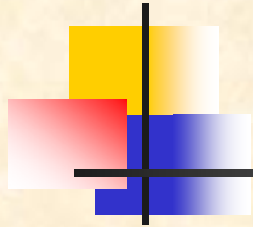
- ◆ Sound power levels (SWLs) of different chillers in one case:

Chiller with	Capacity	SWL
reciprocating compressors not enclosed with noise panels	200 tons	108 dB(A)
reciprocating compressors enclosed with noise panels	200 tons	103 dB(A)
screw compressors enclosed with noise panels	200 tons	92 dB(A)



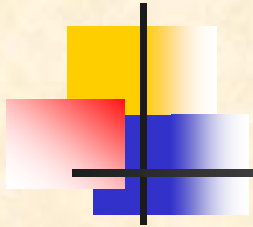
Noise Mitigation Measures at Paths

- ◆ **Air-borne noise**
 - Noise panels (barriers or enclosures)
 - Silencers
 - Acoustic louvres
 - Vent cowls to divert noise away from NSR
- ◆ **Structure-borne noise**
 - Vibration isolators at different transmission paths



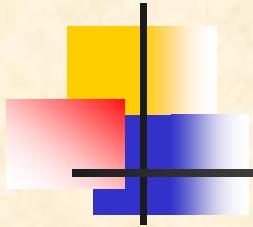
Vibration Isolator

Mounting	Hanger	Flexible connector	Inertia block	Mastic
Spring Rubber Pad (rubber/cork)	Spring Rubber			
Between plinth & machine, or (pad) between pipe and pipe support	Between ceiling & machine/pipe	Between machine & pipe/air duct	Between machine & mountings	At wall/slab opening for pipe

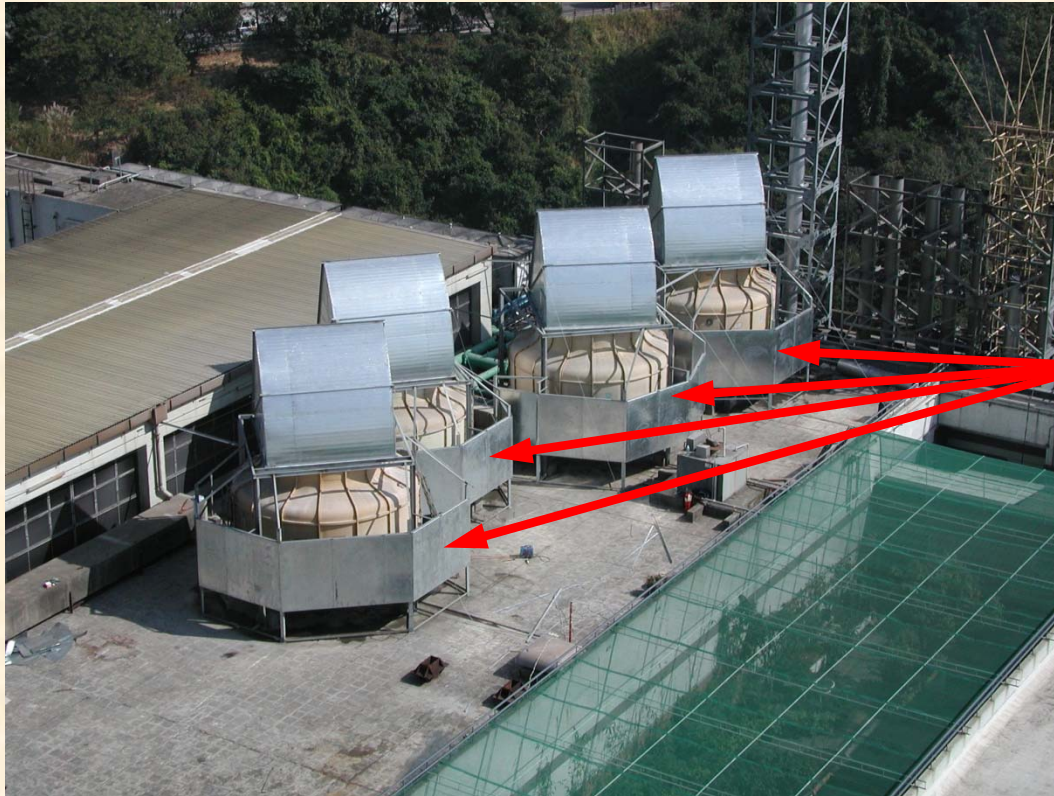


Vent Cowl for Diversion of Noise

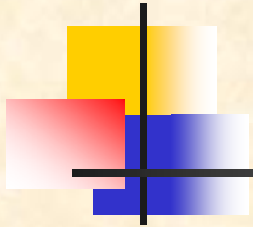




Noise Panel

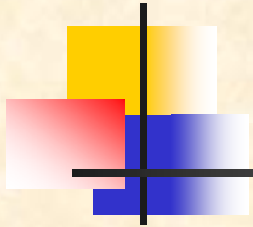


Noise of water spraying in cooling towers screened with noise panels



Silencer





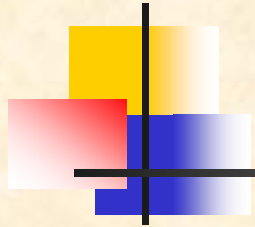
Silencer and Flexible Connector



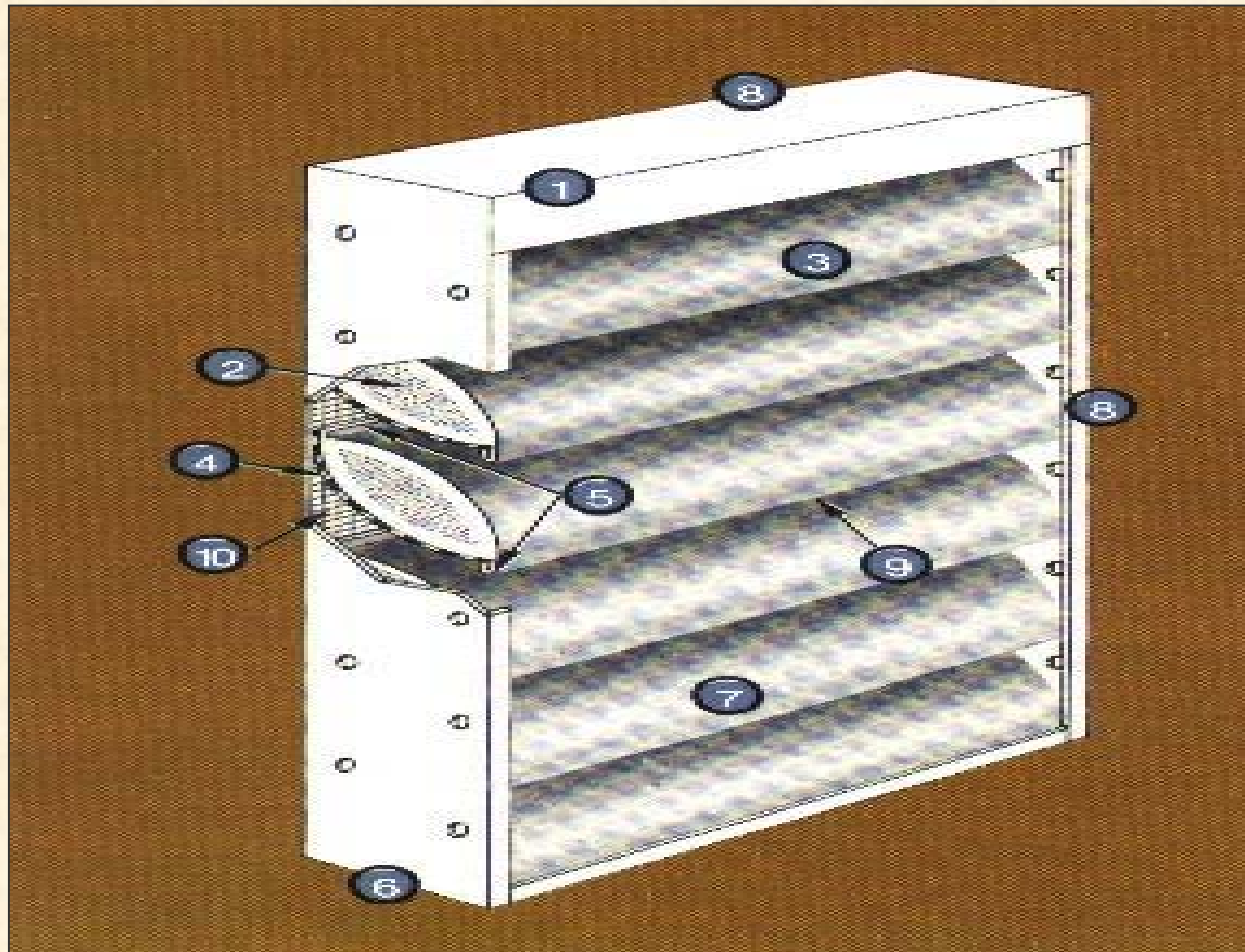
Fan

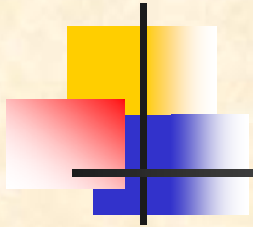
Flexible connectors at fan inlet and outlet

Silencer



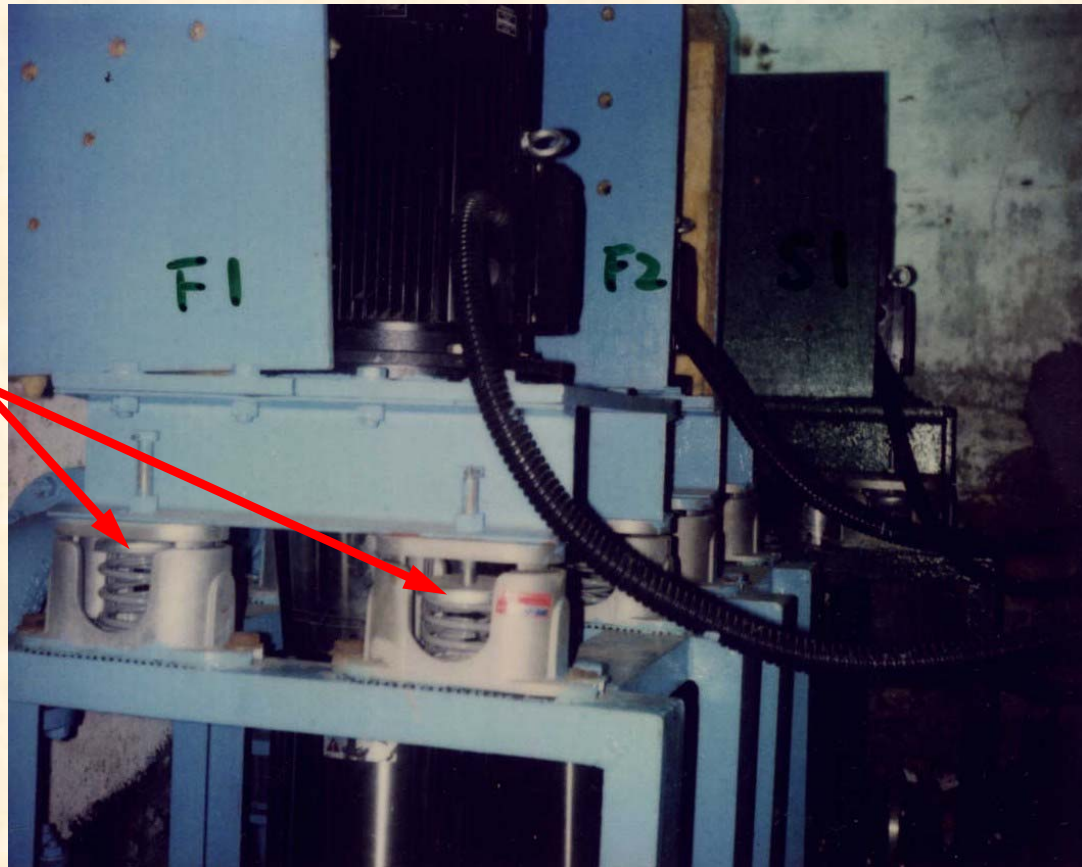
Acoustic Louvre

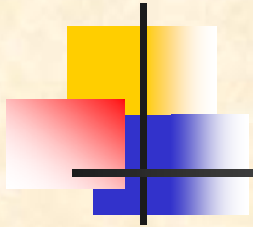




Vibration Isolator

Spring mountings
for pump

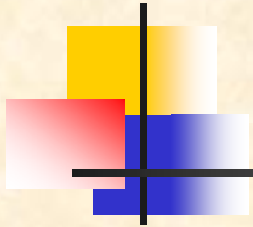




Vibration Isolator

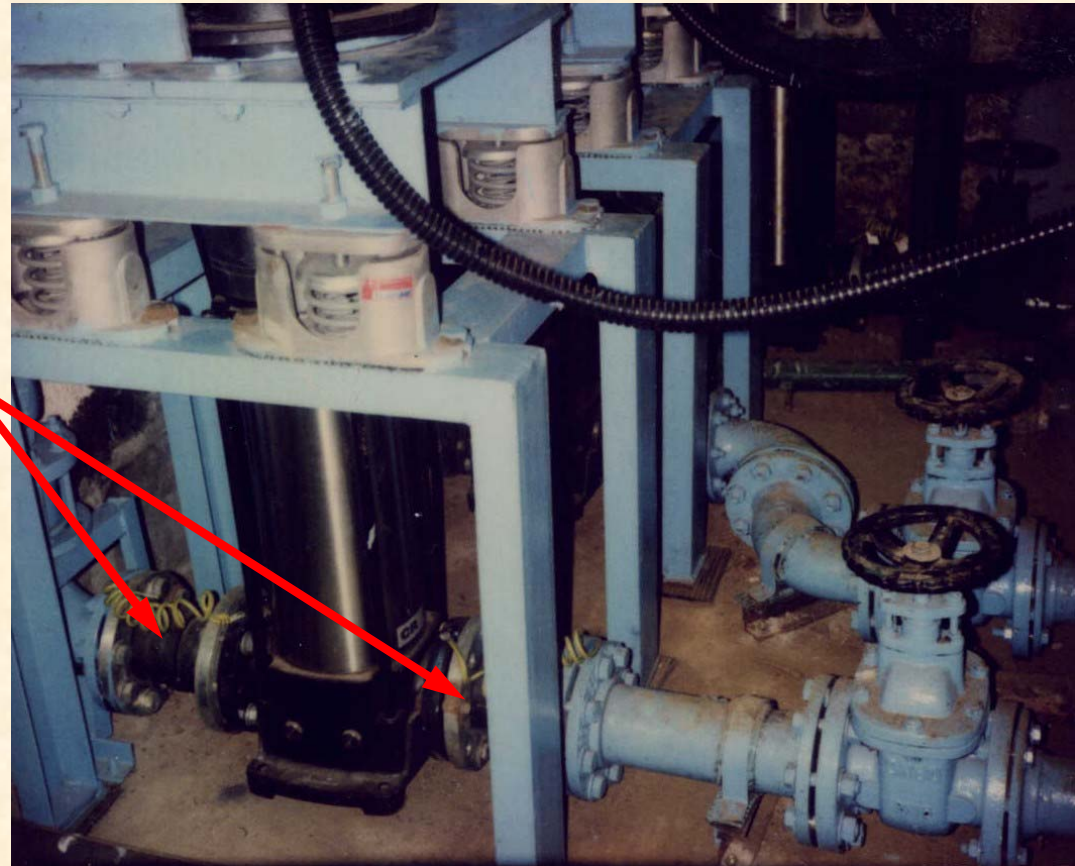
Spring hangers





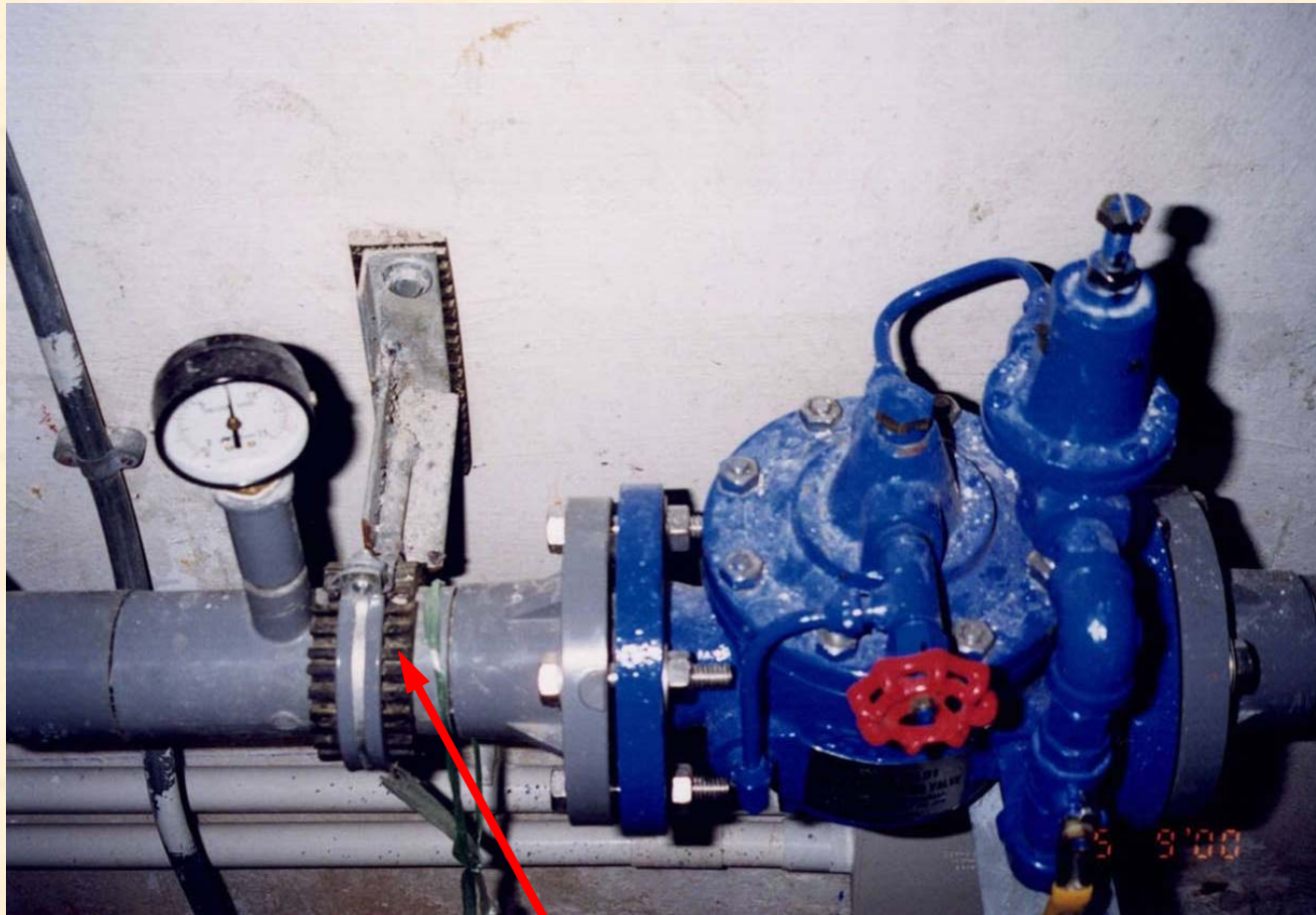
Vibration Isolator

Flexible connectors
at pump inlet and
outlet

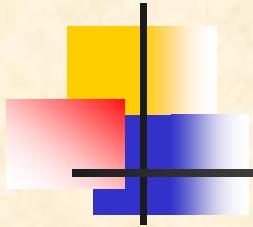




Vibration Isolator



Rubber pad at pipe support



Vibration Isolator

Mastic filling in gap
between pipe and
wall



More Examples of Retrofitted Measures for Machine Noise





Noise Mitigation Measures at Receivers

- ◆ Noise insulation
 - = specially provided glazing
- ◆ For hotels and service apartments fitted with central air-conditioning only

Examples of Retrofitted Measures for Railway Noise



MTR - Heng Fa Chuen

Examples of Retrofitted Measures for Railway Noise



MTR - Tsui Wan Estate

Examples of Retrofitted Measures for Railway Noise

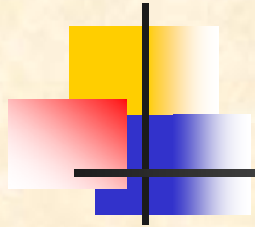


KCR - Tai Wo Estate

Examples of Retrofitted Measures for Railway Noise



KCR - Tai Po Market



Noise Control Ordinance

Licensing & Permitting



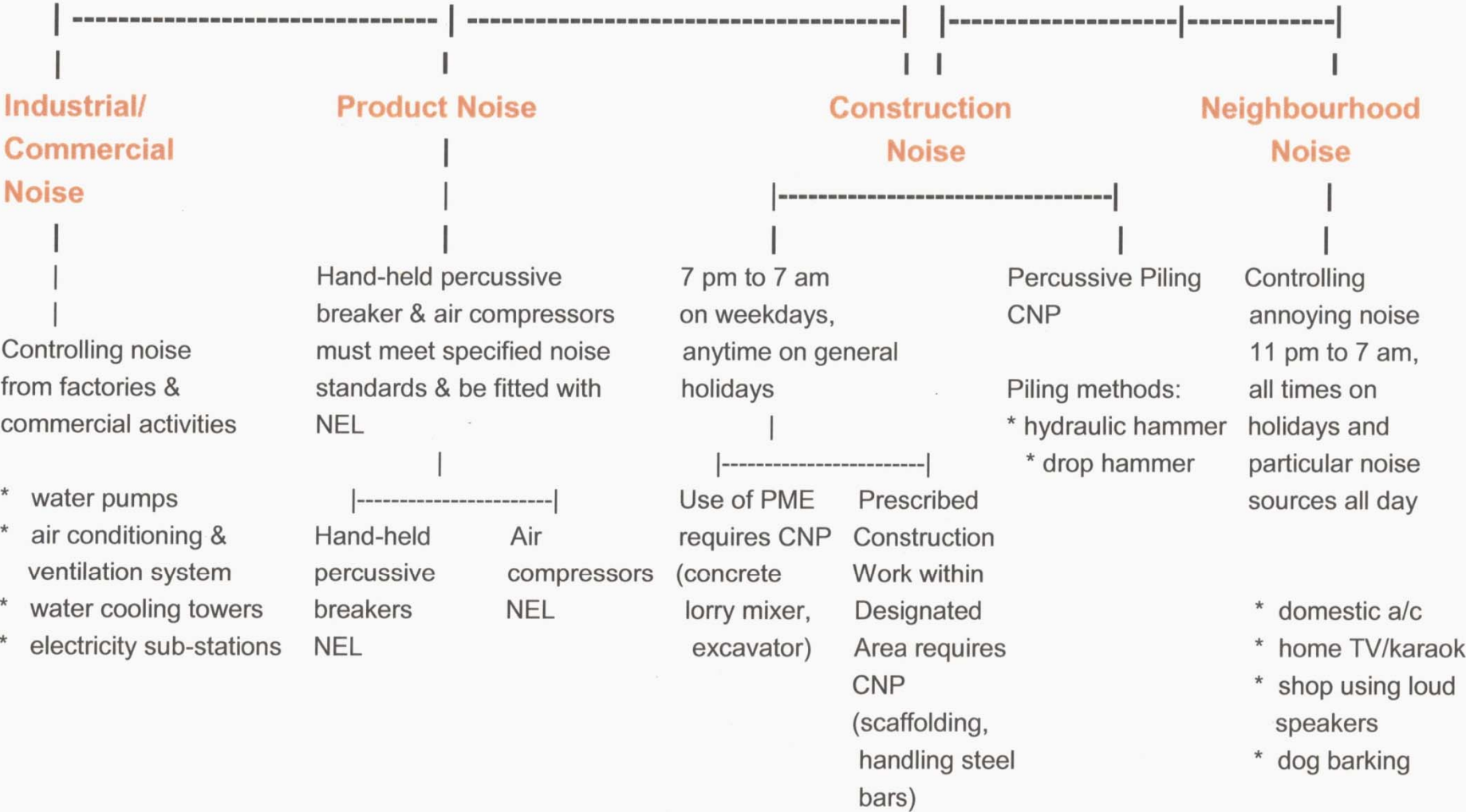
Noise Control Ordinance (NCO) *(Cap. 400)*

- * Construction Noise Control
- * Product Noise Control
- * Construction Noise Permit Application
- * Quieter Equipment / Methods

Noise Control Ordinance & Control Authorities







Environmental Protection Department

Police



NB: Noise Emission Label (NEL) Powered Mechanical Equipment (PME) Construction Noise Permit (CNP)

Construction Noise Permit (CNP) System

Hours	Percussive Piling		General Works	
	General Holidays	Weekdays	General Holidays	Weekdays
0000-0700	✗	✗		
0700-1900	✗			✓
1900-2400	✗	✗		

✓ - Allowed

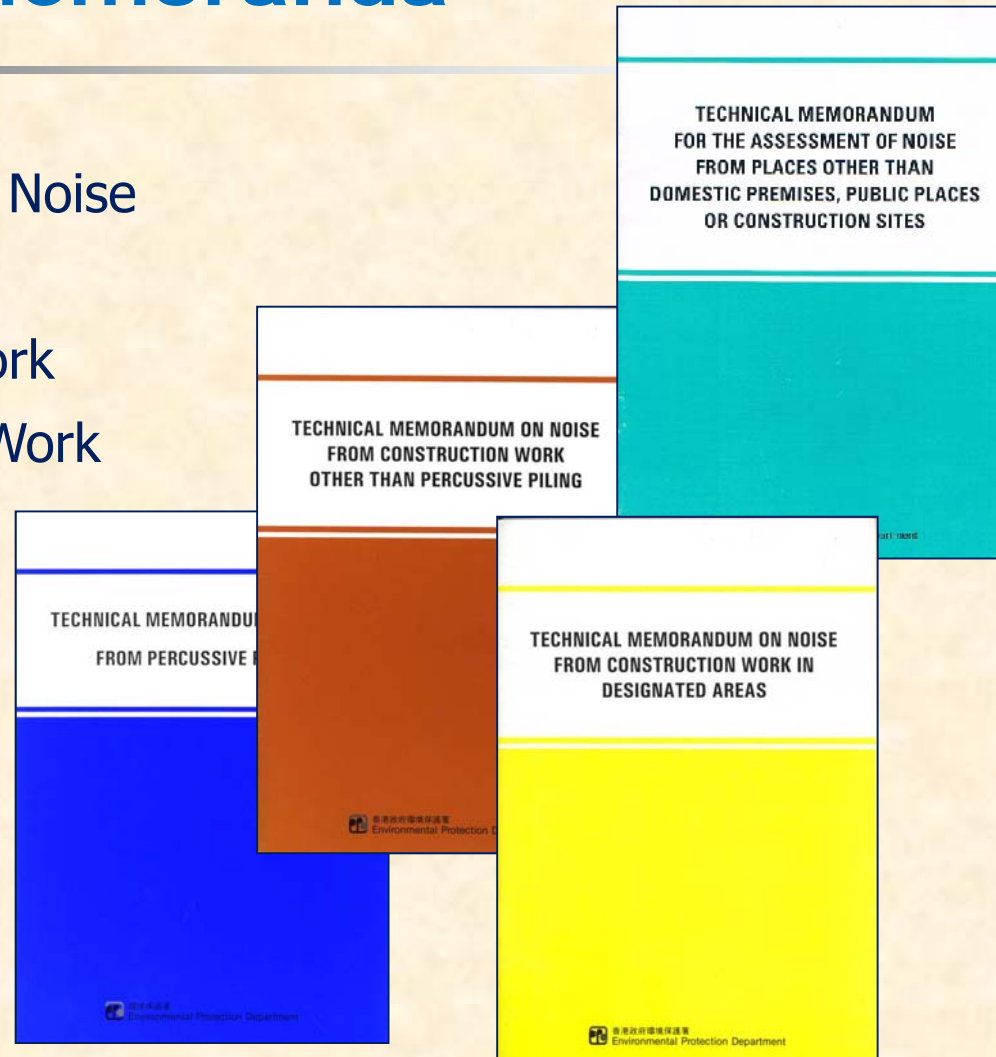
✗ - Not allowed

 - CNP required



Technical Memoranda

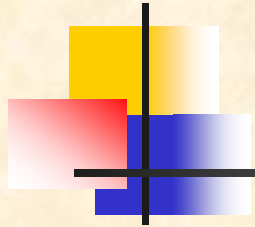
- Industrial & Commercial Noise
- Percussive Piling
- General Construction Work
- Prescribed Construction Work



Percussive Piling CNP

- *Technical Memorandum for CNP assessment*
- Refuse or issue CNP for 3, 5 or 12-hour
- Piling hours to suit schools & examinations
- Diesel, Steam & Pneumatic hammers are banned in built-up areas





Control on General Works

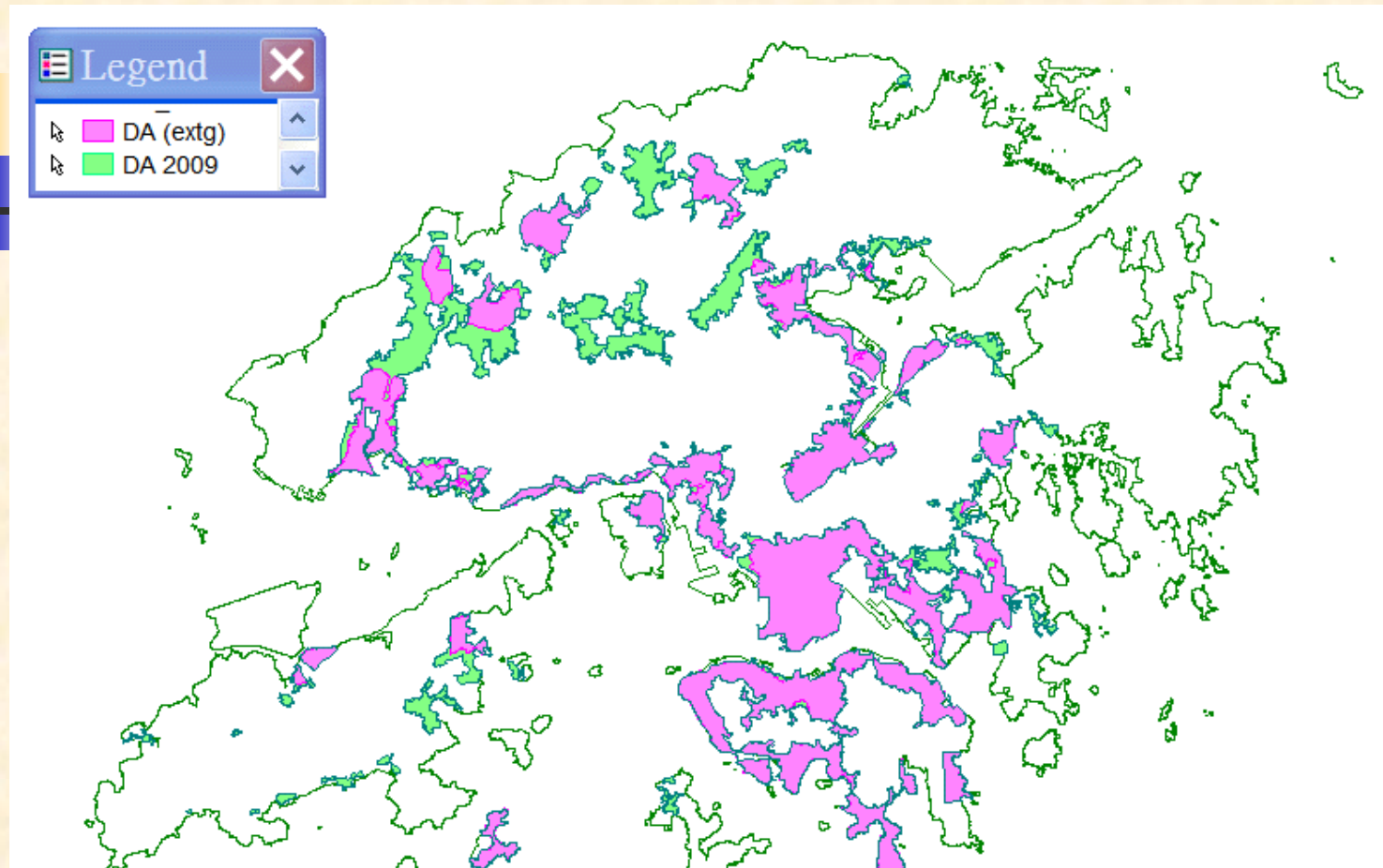
- * CNP for restricted hours:
(7pm-7am or any time on General Holidays)
- * Powered Mechanical Equipment
(e.g. hoist, excavator, lorry)
- * Prescribed Construction Work in designated areas

Prescribed Construction Work (PCW)

- Erection / dismantling of formwork / scaffolding
- Loading / unloading / handling of rubble, wooden boards, steel bars, wood or scaffolding material
- Hammering



Designated Area



Areas PCW control
* virtual ban for noisy work in built-up area

General Works Control



Specified Powered Mechanical Equipment

Hand-held percussive breaker ▶



◀ Bulldozer



▲ Concrete lorry mixer



▲ Dump truck



▲ Vibratory poker



CNP Assessment

- Technical memoranda for assessment
- Assess noise impact on nearby Noise Sensitive Receivers
- Correction for multi-sites
- Complaints / legal actions are taken into consideration

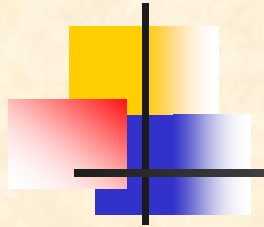




General Construction Work CNP

- * Assessment according to two *Technical Memoranda*
- * Acceptable Noise Level of NSR
- * Noise from Equipment
- * Working Methods for PCW
- * Unavoidable Constraints
- * Complaints / Prosecutions

GW CNP vs PP CNP



	GW	PP
CNP is required for	Restricted Hours	0700 – 1900 on weekdays [#]
Refusal Mechanism	Yes, if CNL > ANL	No, minimum piling hour is 3
Position of PME / Piling Machines	Notional Source Position	Perimeter of piling site nearest to NSR
NSRs	Domestic premises, Hotel, Hostel, Hospital, Medical Clinic, Educational Institution, Place of Public Worship, Library, Court of Law or Performing Arts Centre	Domestic premises, Hotel, Hostel, Hospital, Medical Clinic, Educational Institution, Place of Public Worship, Library, Court of Law or Performing Arts Centre, Office Building

[#]PP during restricted hours is prohibited



Application for NEL

- **Prescribed Product**
 - Air compressor for construction use,
 - Hand-held percussive breaker
 - NEL must be affixed to equipment when in use
- Application in prescribed form, together with supporting documents, e.g. test report.
- To be processed within 28 calendar days.



Hand-held Breaker fitted with NEL

Trade Name	牌子: Super-breaker
Model	型號: SB-0001-XYZ
Serial Number	編號: XYZ-0001-001
Sound Power Level	聲功率級
114 分貝 A dB (A)	
Label Number	檔號: NL-5678-92-001
最高極限	114 分貝 A
Permissible Limit:	dB (A)
<small>噪音管制監督簽發 Issued by the Noise Control Authority</small>	
<small>EPD119A</small>	

NEL



Air Compressor fitted with NEL

Trade Name	牌子: Super-air-compressor
Model	型號: SAC-0001-ABC
Serial Number	編號: ABC-0001-001
Sound Power Level	聲功率級
100 分貝 A dB (A)	
Label Number	檔號: NL-1234-92-001
最高極限	100 分貝 A
Permissible Limit:	dB (A)
<small>噪音管制監督簽發 Issued by the Noise Control Authority</small>	
<small>EPD119</small>	



Offence

Prescribed products are required to be fitted each with a Noise Emission Label (NEL). Any person who used, or caused to be used, any such prescribed product without a NEL commits an offence.



Quality Powered Mechanical Equipment (QPME)

QPME = **Environmentally friendly
in manufacturing and operation**

- Meeting EU Directive
- 2000/14/EC, Japanese MLIT
- or other equivalent or better
- Standards.



Quality Powered Mechanical Equipment (QPME)

Benefits to Communities:

- Less environmental nuisance
 - Quieter
 - More efficient
 - Used also in the daytime



Quality Powered Mechanical Equipment (QPME)

Benefits to Industries:

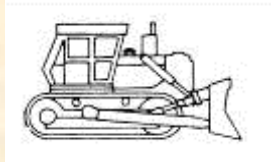
- Facilitate business (Quote the unique ID Code for QPME in CNP applications)
- Encourage use of QPME
- Support “Pay for Safety & Environment” Scheme
- Free of charge



Equipment included in QPME System

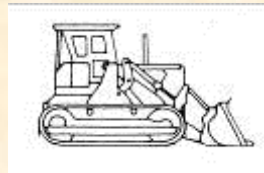
- 1. Tracked bulldozer

- 履帶式推土機



- 2. Wheeled bulldozer

- 輪動式推土機

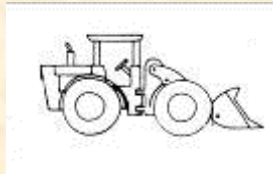


- 3. Tracked loader

- 履帶式搬土機

- 4. Wheeled loader

- 輪動式搬土機



- 5. Excavator

- 挖土機



- 6. Mobile crane

- 流動起重機

- 7. Road roller

- 道路滾壓機



- 8. Vibratory roller

- 振盪式滾壓機

- 9. Asphalt paver

- 瀝青攤鋪機



- 10. Vibratory compactor

- 振動式壓實機

- 11. Power rammer

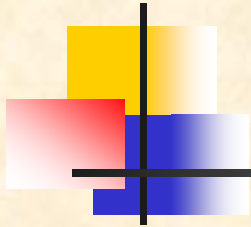
- 機動夯土機

- 12. Generator

- 發電機



Quality Powered Mechanical Equipment (QPME)



One-off Notification Process:

- EPD assigns an unique ID code for each accepted QPME.
- Successful applicants:
 - produces QPME Labels themselves
 - enter EPD website with their own user account
 - print out and plastic laminate QPME label
 - affix QPME label to corresponding equipment
- Process within 28 days
- Notified by e-mail or writing

Type 類別	Tracked Loader 履帶式搬土機	
Manufacturer / Trade Name 製造商 / 牌子	ABC	
Model 型號	XY-123	
Serial Number 編號	0123456	
Guaranteed Sound Power Level 保證聲功率級	105	dB(A) 分貝(A)
QPME ID Code 識別號碼	EPD-12345	



CNP Applications Checking & Enforcement

- Quote QPME ID Code in CNP application.
- Assessment based on Sound Power Level of QPME.
- Benefit: 5 to 15 dB.
- QPME Label need to be affixed to the equipment during use.
- Enforcement conducted in response to complaint.
- Noisy items would be taken out of the QPME Database.
- Concerned CNP will be cancelled.

QPME Website

<http://www.epd.gov.hk/cgi-bin/npg/qpme/index.pl?lang=eng>

The screenshot shows the EPD Noise website interface. The main heading is "NOISE : quality powered mechanical equipment (QPME)". Below this, there is a search form with a "QPME Type:" dropdown menu and a "Keyword:" input field. A red circle highlights the search form. Below the search form, there is a table of QPME information. The table has columns for "Type", "Manufacturer / Trade Name", "Date", and "Photo".

Type	Manufacturer / Trade Name	Date	Photo	
Bulldozer, tracked	Caterpillar	D3G XL	15/1/1999	Photo
Asphalt paver	Caterpillar	D4G XL	15/1/1999	Photo
Road roller	Caterpillar	D7Rll	15/1/1999	Photo
Excavator, wheeled/tracked	Osaka	D275AX-5	15/1/1999	Photo

This is a close-up of the "QPME Type:" dropdown menu. It shows a list of equipment types with a "Keyword:" input field next to each. The list includes: Asphalt paver, Bulldozer, tracked, Bulldozer, wheeled, Compactor, vibratory, Crane, mobile (diesel), Excavator, wheeled/tracked, Generator, Loader, tracked, Loader, wheeled, Power rammer (petrol), Road roller, and Roller, vibratory. Below the list, there is a "Trade Name" field with "Caterpillar" entered and "D3G XL" next to it. A "Login" button is visible on the right side of the menu.

QPME table & search function



Liability of Directors (S.28A)

- ◆ **Offence committed by body corporate**
 - director or officer (concerned in management of the body corporate) guilty of the like offence
- ◆ **Defence to charge** (other than s.6(1)(a), (2)(a) or (3)(a)) if the director or officer
 - took reasonable precautions and exercised due diligence (code of practice to be issued by Authority under s.28B) or
 - established proper system and ensured effective system operation



Defence (S.33)

Authorization under any licence, permit or exemption granted under other Ordinance

Prevention of injury to person or saving of life of person

Prevention of damage to property

Circumstances which would otherwise cause such damage or

Prevention of serious interruption or disruption to public transport system

interruption/disruption could not reasonably have been foreseen



Emergency Construction Works

- Construction works under categories in s.33 of NCO (e.g. works connected with road collapses or with repair of burst mains)
- Authority unable to issue CNPs immediately
- Contractor to adopt measures to minimize the noise as far as practicable (administrative)
- Public utility companies/Government departments to record and report details of work to NM section in NMPG under Emergency Work Reporting System (administrative)



Emergency Construction Works

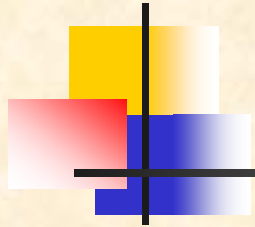
- Where an offence is committed by a body corporate,
- the director* is guilty of the like offence if
 - NCO proceedings have been instituted against the body corporate for specified place
 - the Authority has, in relation to the proceeding, served on specified person a notice, and
 - the specified offence
 - (i) relates to the specified place; and
 - (ii) occurs within 2 years from the notice

* concerned in the management of the body corporate, or his delegate



Noise Control Ordinance

Case Study



Noise Control Ordinance

THANK YOU