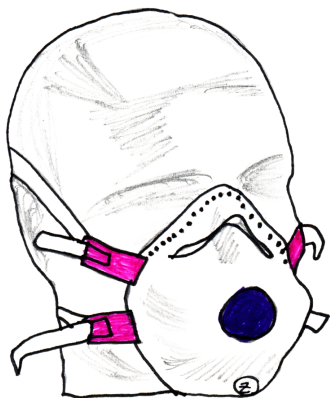


## Fine dust and the "sick building syndrome"



Fine dust - definition:

Airborne solid particles, originating from human activity and natural sources such as fires and wind-blown soil, that eventually settle through the force of gravity and can cause injury to human and other animal respiratory systems through excessive inhalation.

Sick Building Syndrome - definition:

**Sick Building Syndrome (SBS)** is a combination of ailments associated with an individual's place of work; typically, but not always, an office building.

Sick Building Syndrome is frequently ascribed to flaws in heating, ventilation, and air conditioning systems, and is often 'cured' by boosting the turn-over rate in fresh air exchange with the outside air.

Other suggested causes are contaminants produced by out-gassing of some types of building materials.

### Do printers add to the risk?

Printers are known to release ultra-fine dust and affect indoor air quality.

It has been demonstrated that printers are a potential source of indoor air pollutants, the substances that may be a contributing factor to 'sick building syndrome'.

Many of us spend as much as 80% of our time in indoor environments and a substantial amount of this time is spent at work. Investigations into indoor air quality have revealed that there are numerous indoor air pollutants present in most office areas, and these include volatile organic compounds, ozone and dust.

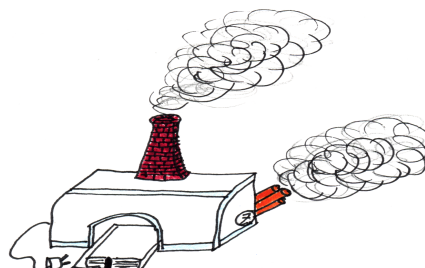
By law, employers have a 'duty of care' to look after their employees and to provide adequate protection against indoor air pollutants.

Research in Australia has confirmed the worries of many people working close to printers, showing that ultra-fine dust particles can be emitted in significant quantities from certain printers and photocopiers. The ultra-fine particles are similar in size to those in cigarette smoke and have the ability to penetrate deep into the lungs. The ultra-fine particles can cause a wide range of symptoms often associated with 'sick building syndrome' such as sore throats and minor respiratory problems.

Of 62 printers tested, more than 17 were high emitters.

It is advisable to measure the level of 'indoor pollutants' and see if there is a problem. Printers found to be high emitters can be removed or relocated to well-ventilated areas.

The quality and circulation of fresh air introduced into office environments needs to be assessed to ensure that the air conditioning process is effective. Good ventilation is the key to extracting indoor air pollutants.



The reassuring aspect for employers is that solutions for combating indoor air pollutants can be pragmatic and easy to implement.

Environmentalists recommend that more detailed examination of the workplace is carried out where symptoms of 'sick building syndrome' persist in spite of the precautions taken. There is a wide variety of tests to determine the presence and concentration of indoor air pollutants and to measure comfort parameters like temperature, humidity and ventilation.

Get your staff working in a more productive environment as soon as possible!

480 words

**Glossary:**

syndrome	(medizinisch) Krankheitsbild
airborne	in der Luft befindlich ((schwebend?))
settle	sich absetzen, sich niederlassen
respiratory	die Atemwege betreffend
excessive	im Übermaß, übermäßig
ailment	Leiden, Krankheit ((, Beschwerden?))
flaw	Mangel, Defekt
contaminant	verunreinigende Substanz, Schadstoff
release	abgeben, absondern
source	Quelle, Ursache
reveal	enthüllen
volatile	leicht flüchtig, leicht verdampfend
compound	Zusammensetzung (chemisch.)
penetrate	eindringen, durchdringen
sore throat	Halsweh
emitter	Emissionsquelle
assess	den Wert feststellen
extract	herausziehen, extrahieren
reassure	Versichern ((, Zuversicht geben?))
combat	bekämpfen
recommend	empfehlen
persist	fortdauern, weiter bestehen
precautions	Vorsichtsmaßnahmen

**How does the text express it in English?**

**Look for the corresponding parts of the English text and enter them here.**

Die festen Bestandteile setzen sich als Folge der Gravitation letztendlich ab.	
SBS lässt sich oft dadurch „heilen“ indem man den Frischluftdurchsatz erhöht.	
Von Gesetzes wegen haben Arbeitgeber eine Fürsorgepflicht.	
Die ultra-feinen Teilchen können ein breites Spektrum an Symptomen verursachen.	
Gute Durchlüftung ist der Schlüssel dazu, luftverschmutzende Substanzen aus Innenräumen heraus zu bekommen.	

**Make questions about the underlined parts of the following sentences.**

Printers are known to <u>release ultra-fine dust and affect indoor air quality.</u>	
A substantial amount of this time is spent <u>at work.</u>	
The ultra-fine particles are similar in size <u>to those in cigarette smoke.</u>	
Good ventilation is essential for <u>extracting indoor air pollutants.</u>	
There is <u>a wide variety of tests</u> to determine the presence of indoor air pollutants.	

Jumbled sentences: please put the words in each box into the correct sequence!

**No. 1**

to are Printers .  
air affect known quality indoor

Write the sentence out here:

---

**No. 2**

our 80 as environments much of  
as time of us . % spend indoor Many  
in

Write the sentence out here:

---

**No. 3**

and , pollutants organic . volatile  
ozone compounds Indoor air dust include

Write the sentence out here:

---

**No. 4**

ultra fine ability the have deep into  
lungs to - The penetrate the particles

Write the sentence out here:

---

**No. 5**

easy implement combating for Solutions be  
to air can pollutants indoor

Write the sentence out here:

---

**No. 6**

The be presence of  
air can measured indoor pollutants

Write the sentence out here:

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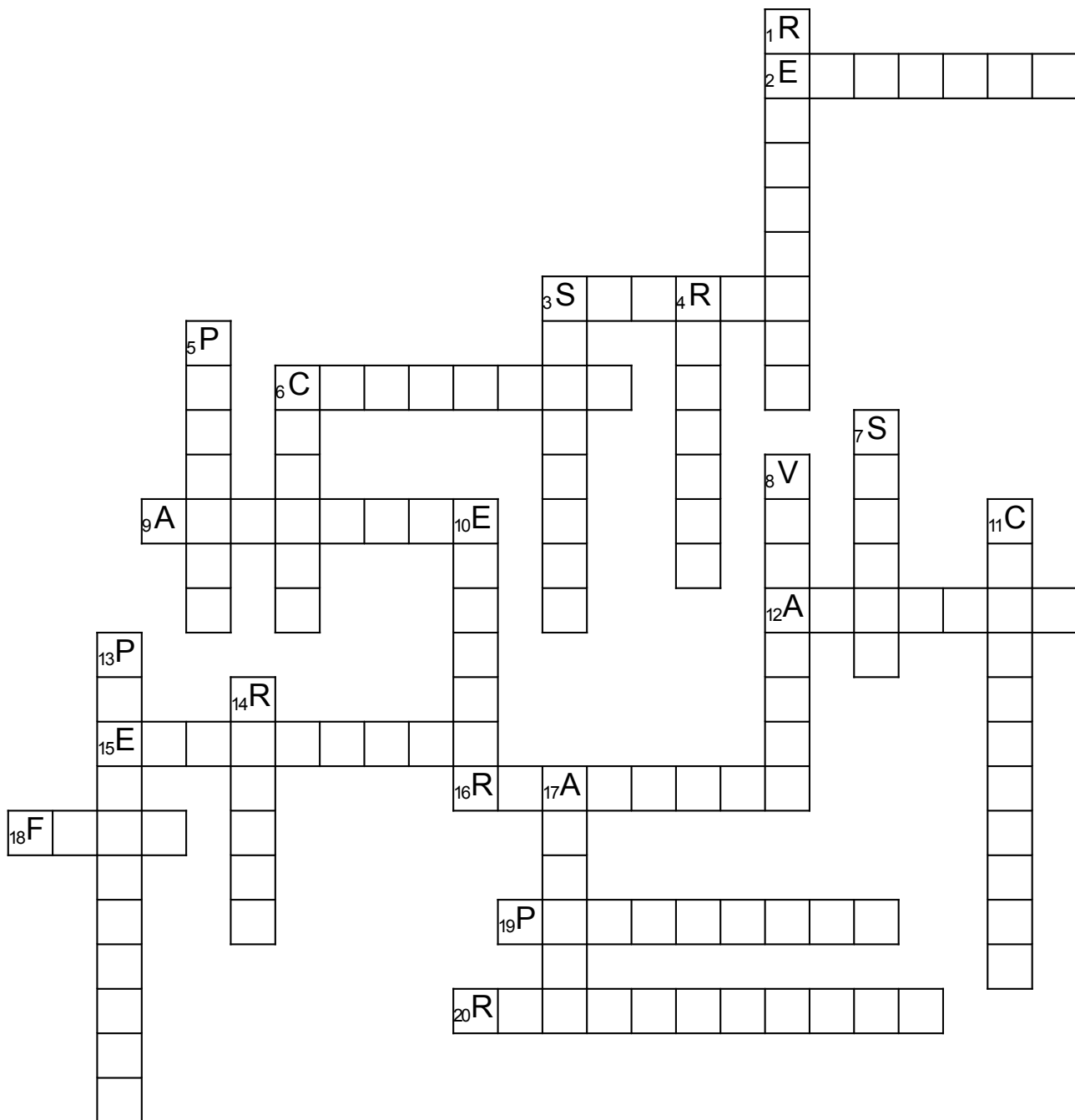
**There are 9 words hidden in this word square.**

The words mean:

- 1) (Nach)forschung: \_\_\_\_\_
- 2) Vorsichtsmaßregel: \_\_\_\_\_
- 3) Schadstoff: \_\_\_\_\_
- 4) leicht flüchtig (z.B. Alkohol): \_\_\_\_\_
- 5) in der Luft befindlich: \_\_\_\_\_
- 6) Zusammengehörige Gruppe von Krankheitssymptomen: \_\_\_\_\_
- 7) extrahieren: \_\_\_\_\_
- 8) Beschwerden, Leiden: \_\_\_\_\_
- 9) einatmen: \_\_\_\_\_

Q	G	H	V	C	O	N	T	A	M	I	N	A	N	T
V	P	Z	X	F	S	Z	G	I	N	C	Z	R	S	A
O	C	C	U	H	B	H	J	N	H	Y	A	Z	Y	K
V	H	E	E	Q	K	K	S	V	I	Q	I	F	N	E
O	P	C	L	X	E	G	U	E	J	H	R	X	D	Q
L	A	Q	L	C	X	O	S	S	X	V	B	A	R	O
A	I	X	L	R	T	N	N	T	M	J	O	K	O	H
T	L	B	G	Z	R	B	K	I	J	M	R	E	M	M
I	M	G	Q	O	A	E	Y	G	R	N	N	K	E	C
L	E	U	L	T	C	P	V	A	A	F	E	B	C	I
E	N	D	A	N	T	R	O	T	V	C	E	R	L	J
D	T	S	Y	N	C	T	K	I	M	M	F	I	C	P
E	Y	C	L	H	W	T	H	O	R	G	C	A	I	U
H	G	M	G	I	B	M	I	N	H	A	L	E	F	W
P	T	Y	P	R	E	C	A	U	T	I	O	N	S	I

Test your vocabulary





**Across:**

2. extrahieren, herausziehen
3. Quelle, Ursache
6. (chemische) Zusammensetzung
9. in der Luft befindlich
12. Krankheit, Leiden
15. im Übermaß, übermäßig
16. beruhigen, beschwichtigen
18. Fehlfunktion, Defekt
19. eindringen, durchdringen
20. die Atemwege betreffend

**Down:**

1. empfehlen
3. (medizinisch) Krankheitsbild
4. abgeben, absondern
5. weiter bestehen
6. bekämpfen
7. sich absetzen, sich niederlassen
8. leicht flüchtig, leicht verdampfend
10. Emissionsquelle
11. verschmutzende Substanz, Schadstoff
13. Vorsichtsmaßnahmen
14. enthüllen, offen legen
17. den Wert (z.B. der Abgasverschmutzung) feststellen

**Solution: How does the text express it in English?**

Die festen Bestandteile setzen sich als Folge der Gravitation letztendlich ab.	Solid particles eventually settle through the force of gravity.
SBS lässt sich oft dadurch „heilen“ indem man den Frischluftdurchsatz erhöht.	SBS is often 'cured' by boosting the turn-over rate in fresh air exchange.
Von Gesetzes wegen haben Arbeitgeber eine Fürsorgepflicht.	By law, employers have a 'duty of care'.
Die ultra-feinen Teilchen können ein breites Spektrum an Symptomen verursachen.	The ultra-fine particles can cause a wide range of symptoms.
Gute Durchlüftung ist der Schlüssel dazu, luftverschmutzende Substanzen aus Innenräumen heraus zu bekommen.	Good ventilation is the key to extracting indoor air pollutants.

**Solution: Make questions about the underlined parts of the following sentences.**

Printers are known <u>to release ultra-fine dust and affect indoor air quality.</u>	What are printers known for? / What are printers known to do ((Perhaps better to offer both alternatives in the key))
A substantial amount of this time is spent <u>at work.</u>	Where is a substantial amount of this time spent?
The ultra-fine particles are similar in size <u>to those in cigarette smoke.</u>	What are the ultra-fine particles similar in size to?
Good ventilation is essential for <u>extracting indoor air pollutants.</u>	What is good ventilation essential for?
There is <u>a wide variety of tests</u> to determine the presence of indoor air pollutants.	What is there to determine the presence of indoor air pollutants?

**Solution: Jumbled Sentences**

1. Printers are known to affect indoor air quality.
2. Many of us spend as much as 80% of our time in indoor environments.
3. Indoor air pollutants include volatile organic compounds, ozone and dust.
4. The ultra-fine particles have the ability to penetrate deep into the lungs.
5. Solutions for combating indoor air pollutants can be easy to implement.
6. The presence of indoor air pollutants can be measured.

**Solution: Word square puzzle**

			C	O	N	T	A	M	I	N	A	N	T
							I					S	
							N			A		Y	
V							V			I		N	
O				E			E			R		D	
L	A			X			S			B		R	
A	I			T			T			O		O	
T	L			R			I			R		M	
I	M			A			G			N		E	
L	E			C			A			E			
E	N			T			T						
	T						I						
							O						
							I	N	H	A	L	E	
			P	R	E	C	A	U	T	I	O	N	S

**Solution Crossword puzzle:**

