

Chapter 12 Methane Hydrate

*methane [ˈmeθən]n. (名詞 noun)

1. 【化】甲烷,沼氣

*hydrate [ˈhaɪdret]n. (名詞 noun)

1. 【化】水合物;氫氧化物

vt. (及物動詞 transitive verb)

1. 使成水合物

*disaster [dɪˈzæstə]n. (名詞 noun)[C][U]

1. 災害,災難,不幸

We were all shocked by the **disaster**.

這場災難使我們所有人大為震驚。

*sediment [ˈsedəmənt]n. (名詞 noun)[C][U]

1. 沈積,沈澱
2. 沈積物

She scooped out the yeasty **sediments**.

她將發酵的沈澱物舀了出來。

*transport [ˈtrænsˈpɔrt]vt. (及物動詞 transitive verb)

1. 運送,運輸,搬運

The goods will be **transported** to Tokyo by air.

貨物將空運到東京。

*impede [ɪmˈpiːd] vt. (及物動詞 transitive verb)

1. 妨礙,阻礙;阻止

The attempt to rescue the climbers was **impeded** by bad weather.

救援登山者的努力因天氣惡劣而受阻。

*chunk [tʃʌŋk] n. (名詞 noun) 【口】 [C]

1. (肉、木材等的)大塊,厚片

a **chunk** of meat

一大塊肉

*tremendous [triˈmendəs] a. (形容詞 adjective)

1. 巨大的,極大的

They cost a **tremendous** amount of money.

他們花去了一大筆錢。

2. 【口】極度的,驚人的

The play became a **tremendous** hit.

該劇極為叫座。

*cement [ˈsiːmənt] n. (名詞 noun)[U]

1. 水泥

The **cement** has already set.

那水泥已經凝固了。

2. 膠結材料;(牙科用來填補空洞的)黏固粉;白堊

*tamper [ˈtæmpə] vi. (不及物動詞 intransitive verb)[(+with)]

1. 損害,削弱;竄改

The letters may have been **tampered** with.

這封信有可能被竄改過。

2. (用不正當手段)影響;賄賂

tamper with an official

賄賂官員

3. 瞎弄,瞎搞

Please don't **tamper** with the clock radio.

請不要瞎弄那隻收音機鬧鐘。

*deposit [dɪˈpɒzɪt] n. (名詞 noun)

1. 存款[C]

2. 保證金;押金;定金[C][S1]

You must pay a **deposit** if you want to reserve the room.

你要預訂房間,就得先付定金。

3. 沈澱物;礦床[C][U]

The country is short of known **deposits** of coal.

這個國家缺少已知的煤礦礦床。

4. 堆積;沈澱[U][C]

*potent [ˈpɒtnt̩] a. (形容詞 adjective)

1. 強有力的;有權勢的;有影響的

He is a **potent** ruler.

他是一個強有力的統治者。

2. (藥等)有效力的,有效能的

A new **potent** antibiotic will shortly be available.

一種新的高效抗生素不久將在市面銷售。

*speculate [ˈspekjə,let] vt. (及物動詞 transitive verb)

1. 推測,推斷[Y][+that]

He was **speculating** that this might be his last chance.

他推測這可能是他的最後一次機會了。

vi. (不及物動詞 intransitive verb)

1. 思索;沈思;推測[+on/upon/about]

She **speculated** about her friend's motives.

她猜測她朋友的動機。

*hasten [ˈhesn̩] vt. (及物動詞 transitive verb)

1. 催促;加速

Warm weather and showers **hastened** the growth of the plants.

溫暖的天氣和陣雨加速了植物的生長。

vi. (不及物動詞 intransitive verb)

1. 趕緊,趕快

I **hastened** home to tell my family the good news.

我趕緊回家告訴家人這一好消息。

2. 趕緊做[+to-v]

He **hastened** to apologize.

他趕緊道歉。

*swell [swel]vi. (不及物動詞 intransitive verb)

1. 腫起,腫脹[(+up)]

His ankles began to **swell**.

他的腳踝腫起來了。

2. (土地等)隆起;(河水等)上漲

3. 增長;增大;壯大[(+to/into)]

The newly-arrived refugees **swelled** the ranks of the unemployed.

新來的難民增加了失業的人數。

*submerge [səb`mɝdʒ]vt. (及物動詞 transitive verb)

1. 把...浸入水中,淹沒

Torrents of water rushed down the mountain and **submerged** the farmland.

山洪暴發,淹沒了農田。

2. 湮沒,覆蓋[H]

His talent was **submerged** by his shyness.

他的靦腆湮沒了他的才能。

*unleash [ʌnˈliːʃ] vt. (及物動詞 transitive verb)

1. 解開...的皮帶
2. 解除...的束縛
3. 宣洩(感情)

※**Methane** : Organic compound, chemical formula CH_4 , colorless, odorless gas that occurs naturally in natural gas (called "firedamp" in coal mines) and from bacterial decomposition of vegetation in the absence of oxygen (including in the rumens of cattle and other ruminants). The simplest member of the paraffin hydrocarbons, methane burns readily, forming carbon dioxide and water with enough oxygen, and carbon monoxide without it. Mixtures of 5~14% methane in air are explosive and have caused many mine disasters. The chief source of methane is natural gas, but it can also be produced from coal. Abundant, cheap, and clean, methane is used widely as a fuel in homes, commercial establishments, and factories. As a safety measure, it is mixed with trace amounts of an odorant to allow its detection. It is also a raw material for many industrial materials, including fertilizers, explosives, methanol, chloroform, carbon tetrachloride, and carbon black, and is the principal source of methanol.

◎**Methane clathrate**, also called **methane hydrate** or **methane ice**, is a solid **clathrate compound** (more specifically, a **clathrate hydrate**) in which a large amount of **methane** is trapped within the **crystal** structure of **water ice**. Originally thought to occur only in the outer regions of the **Solar System** where temperatures are low and water ice is common, significant deposits of methane clathrate have been found under sediments on the **ocean** floors of **Earth**.

Methane is a powerful **greenhouse gas. Despite its short atmospheric **half life** of 7 years, methane has a **global warming potential** of 62 over 20 years and 21 over 100 years. The sudden release of large amounts of natural gas from methane clathrate deposits has been hypothesized as a cause of past and

possibly future [climate](#) changes. Events possibly linked in this way are the [Permian-Triassic extinction event](#), the [Paleocene-Eocene Thermal Maximum](#).

Climate scientists such as [James Hansen](#) expect that methane clathrates in the permafrost regions will be released as a result of global warming, unleashing powerful feedback forces which may cause runaway climate change that cannot be controlled.

Recent research carried out in 2008 in the Siberian Arctic has shown millions of tons of methane being released with concentrations in some regions reaching up to 100 times above normal.