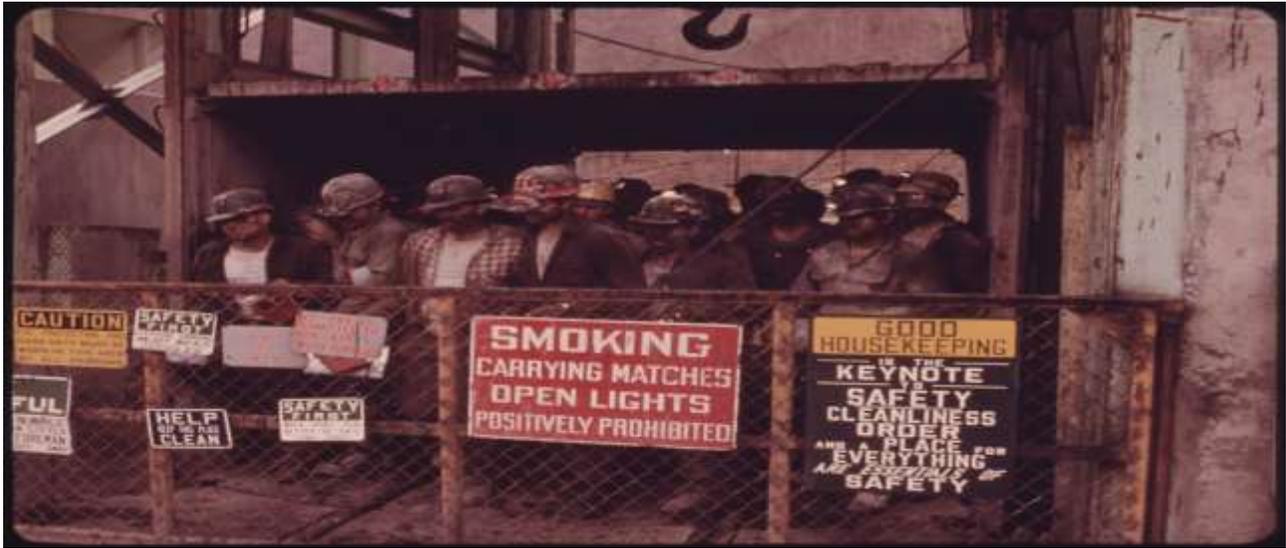


Tar

by dallas jones



Genre

Horror/Suspense

Logline

In America's deepest coal mine, EPA inspectors, intent on shutting down the industry, face death as nature and a malevolent being slaughter using mankind's deepest fears.

Tagline

One's true nature is revealed when facing their ultimate fears.

Man is a fearful creature!

Concept

Why This Is The Ultimate Horror Story: This tale encompasses all these elements – the ultimate nightmare

- **People fear...**
- claustrophobic confining spaces or being trapped
- extreme heights
- fire, especially one's they can't escape from
- extreme heat
- being boiled alive
- suffocating from toxic fumes
- unknown and unseen malevolent supernatural creature
- in the grips of nightmares
- pitch darkness
- the unknown
- others or themselves going insane
- drowning
- being crushed to death
- mob action or people they don't know
- gruesomely being murdered

People's worse and best nature comes out under extreme stress

Short Synopsis

Orders come down from the President, enforce new EPA regulations and shut down America's coal mines. Head of the EPA (Environmental Protection Agency), **Ira Wycot** (50's) and a team of inspectors mysteriously converge on America's most expansive underground coal system at Pennsylvania's 'Indian Feather Mine'.

CONSOL ENERGY, CEO, Big **Bill Carter** (late 40's), directs the Lead Mine Foreman, **Carl Taylor** (39), to personally escort the team of inspectors down the company's deepest exploratory mine. A mile below earth's surface, the mine shaft collapses preventing immediate rescue and forcing the survivors deeper. As the survivors move into a hostile darkness a series of cascading horrors descend upon them.

Fear ramps into terror, as people die from a gauntlet of sources. In the mist of death, Carl and EPA inspector, **Kat Johnson** (20's), grow closer. When Kat is overcome by carbon monoxide, she drifts off into dreams, revealing a pathway to the surface. Realization strikes - a hand other than nature stalks them.

In stifling heat and darkness, death comes in many forms:

(#1 death – falls to his death)

(10 dead – 1st rescue team falls down elevator shaft)

(#2 death – crushed under debris)

(#3 death – disappears into a bottomless chasm)

(#4 death – scalded alive)

(#5 death – trapped, suffocated and crushed)

(#6 death – rescue miner – murdered out of fear)

(6 dead – 2nd rescue team wiped out)

(#7 death – murdered in her sleep)

(#8 death – murdered in a helpless trance)

(#9 death – burned alive)

(#10 death – carved up while still alive)

(#11 death – drowning in tar pit)

(#12 death – goes insane, held fast, murdered by his own hands and vaporized by ancient evil)

A MALEVOLENT SPIRIT manipulating people's fates rescues Carl and Kat to help implement a grand plan to climb out of the darkness and infect the world.

Kat's EPA report condemns coal industry and recommends the closing of all coal mines. The report earns Carl and Kat an invitation to the white house where Kat hands the President a vial containing a souvenir coal sample. The President retires for the evening content in the belief his plan for crippling the coal industry is a success.

In the dark shadows of a restless sleep, a glow pulses from the vial on his bed stand. In the morning, a sleep weary President addresses the nation with a bold agenda for energy independence centering on the nation's most abundant energy source - coal.

A mile long coal train pulls out of the 'Indian Feather Mine'.

Rough Outline

- President of the United States gives an impassioned speech on America's alternative energy future and how fossil fuels must be phased out, special emphasis on moving away from coal.
- A coal mine worker in a trance rides up a mining elevator. At the surface, he rolls out a CARRIER of black coal.

- Holiday season is upon us as a US Postal truck braves the onslaught of a winter storm, making its rounds along a forest lined New Hampshire country road.
- A small package is delivered to the house of EPA inspector, **Kat Johnson** (28). Inside she opens a package containing an unusual gift. Several lumps of COAL.
- On a cold winter's night, a blizzard breaks against Kat's small cottage. Lights flicker as Kat chucks lumps of coal into a coal burning stove. A cloud of embers escape and swirl toward the ceiling.
- In pajamas, Kat pulls up the covers as winds howl outside.
- As Kat dreams, the red glow from the coal burning stove warms the cozy dwelling. Embers crackle and drift across the room. Her dog snarls at them then abruptly curls silently at Kat's feet.
- Strange dark images haunt her dreams.
- While sleepwalking, Kat books an airline reservation.
- Flying over the Pennsylvania countryside oil derricks and open pit mines pepper the landscape.
- A morning frost blankets the ground outside North America's deepest coal mine, Pennsylvania's 'Indian Feather Mine', on what was once Iroquois tribal land.
- Protesters chant as a car drives through the gates carrying the short, rotund, newly appointed Head of the EPA, **Ira Wycot** (40's), and his young model wife, **Jean Wycot** (24).
- In front of the mining operation's CONTROL BUNGALOW, Ira steps out of his car, surprised at finding five other EPA inspectors bundled up outside in the morning chill.
- Inside the bungalow, a cozy coal burning heater warms Operations Manager **Ted Bailey** (50's), Lead Mine Foreman **Carl Taylor** (39), miner **Trig Masters** (30's), and miner **Len Leatherwood** (20's), as they sit around playing poker and laughing about the bonehead inspectors freezing outside. They're waiting for '**Big Bill**' **Carter** (50's) CEO of CONSOL Energy and owner of the 'Indian Feather Mine' to show up for EPA's unannounced facility inspection.
- Jean's patience quickly runs out when the car heater fails. She motions her husband Ira over to the car, grabs his cell and punches in the number for the mining office displayed on the side of the bungalow. Ted Bailey answers. She tells him they have five minutes to get their ass out here and conduct the inspection or they're driving off and shutting down the mine.
- Ted scrambles to contact Bill Carter but his message goes directly to voicemail.
- Ted sends out Carl to prep the inspectors. He instructs Carl, on Big Bill's orders to start the inspection down shaft #7, a 5100 feet exploratory mine system, recently closed because of safety concerns.
- Before the people cram into shaft #7 elevator, safety gear (gloves, helmet, jackets, pants, goggles) is handed out to the inspectors and mining crew while inspection equipment (ropes, breathing equipment, picks, gas meters, flash lights, flares, maps) is stashed into the elevator as Carl conducts a safety lecture.
- The safety lecture designed to scare the inspectors talks of the dangers of deep earth mining.

- Halfway through the safety lecture, 'Big Bill' shows up, pissed off.
- Kat steps onto the elevator platform and glances down between the slats into the darkness. For a moment, she's imagines, she sees a glow. Others, tentatively crowd aboard behind her.
- The Elevator SHUDDERS down the shaft for 10 minutes; one of the EPA inspectors becomes violently sick from motion sickness and vertigo.
- Elevator jolts to a stop, three feet short of the bottom. A loud crack like thunder from below and the elevator drops the last three feet, jarring everyone.
- Carl motions for miner **Trig Masters** (30's) to take a GAS LEVEL READING. He sweeps a small device from top to bottom of the tunnel; the Methane and Carbon Monoxide indicator lights are green. Trig nods as he pulls the safety gate open and motions for everyone to step out. "Watch your step." The roof of the tunnel is only five feet tall at this point (the height of tunnel depends on thickness of coal vein which varies from 4 to 10 feet).
- EPA inspector, **Jim Tannenbaum** (50's) clings to the railing and refuses to exit. Bill tells Carl to drag him out. Carl ignores the command, steps out of the elevator, closes the safety gate and punches a button starting the elevator's ascent.
- Claustrophobic darkness and 120 F degree dry heat envelope the inspectors as everyone goes silent and begins to sweat. Helmet lights automatically switch on in the darkness. Carl flips a switch and a phalanx of lights on both sides of the tunnel come alive. Carl pulls out a map of the layout of the mining complex.
- Ira Wycot complains about the heat. Bill Carter shows no sympathy.
- Carl gives another short lecture on mining protocol.
- As people mill around listening to Carl, air suddenly rushes down the elevator shaft.
- Carl realizes what's happening and yells for everyone to stand clear as Jim's death screams reach them. Carl grabs Kat and drags her to the ground, sheltering her with his body as the elevator crashes and explodes before them.
- On impact debris flies everywhere and **Jim dies (#1 death – falls to his death)**. The force of the impact scatters everyone like blown leaves across the tunnel floor. Choking dust fills the tunnel, threatening the survivors. Carl turns on the breathing equipment and hands out breathing masks attached to the oxygen equipment until the air clears.
- Communication is out with the surface and tunnel lights flicker out. Carl sets forth their options. Wait here for a rescue team or hike two miles down the tunnel to a second elevator shaft. With the relatively cool draft coming down the shaft, Carl favors waiting. Big Bill wants to hike out. Bill's plan would have them on the surface within an hour.
- Carl tells everyone over Bill's objections that it's his job to make safety decisions. Big Bill threatens Carl's job and rallies the scared inspectors to mutiny.
- Carl and Bill come to blows and when Bill is knocked down he pulls a gun and it accidentally discharges into the wall behind Carl. A 'rock burst' tears up the arm of EPA inspector, **Stan Bemis** (30's).
- An ominous noise moves OUT THERE in the darkness, raising the group's fear and forcing Big Bill to back down.

- A flare plunges down the shaft and signals the rescue team's discovery of the accident. Carl motions for Trig to signal back with the flare. Big Bill puts away his gun.
- At topside, a crane has been moved into place above the shaft and a new elevator platform is brought into place.
- The President on the campaign trail in a nearby city is informed of the tragic accident. He makes plans to fly to the accident scene.
- To help breathe, a few of the remaining survivors protect their lungs from the toxic clouds by breathing mostly through damp rags held to their mouth. They mill around waiting for rescue.
- Carl immediately implements safety protocol with water rationing because of heat dehydration and the complaints start.
- Trig stands among the elevator debris and relays what he sees above. Light in the shaft fades as a second elevator platform descends down the shaft with its familiar rattling hum. Excitement and hope grows.
- Eerie noises and shimmering lights down the tunnel frighten some of the survivors.
- While waiting for the elevator, Carl tells a story he heard as a kid, an Iroquois legend about a evil spirit, TAR, and how it would come in your dreams to cause death. He laughs at the end, at the superstitious beliefs of the past and explains scientificall what could be causing the noise and lights.
- From Trig's POV we see a faint glow ascending the shaft. Trig nervously asks if this Tar legend has a physical form.
- At topside the ground around the shaft collapses outward, toward the crane.
- Wind rushes down the elevator shaft again and soon screams from above reach survivors This time without being told, everyone scrambles away from the elevator shaft. Standing inside the shaft, **Trig** trips in the debris trying to escape as the elevator shaft collapses bringing down bodies, timbers, the crane, earth and rock, burying Trig and blocking any rescue attempt from above. (death of 10 rescue crew – fall to their death) (#2 death – crushed under debris).
- Lights cut out, along the tunnel, leaving everyone in darkness except for their helmet lights. Panicky coughs and screams augment the growing terror as some survivors believe something other than a natural disaster is occurring.
- Helmet lights cut through the dust as survivors huddle in fear. Minutes pass and finally a string of lights down the tunnel light up and we can see. A head count reveals 12 survivors. Trig didn't make it.
- Carl tries to calm escalating fears with the help of Kat.
- There's no doubt they can't stay there as a piercing sound from a gas detector tells Carl the area around the shaft is un-breathable. A few people collapse from the toxic gases.
- Carl and others drag the unconscious deeper into the tunnel, away from the toxic dust.
- They must keep them off the ground until they regain consciousness because the ground air is un-breathable.
- With the mine shaft blocked and the extreme temperature there is no argument on their next option. They must make their way to the alternate mine shaft. According to the map, it should be about 2 miles away, less than an

hour's hike. The injured are put aboard an electric tunnel cart and the group stumbles forward like asphyxiated zombies, gasping and coughing down the tunnel. A section of tunnel lights from the wall is taken, coiled in a bundle, hooked to the electric cart battery, and placed on the hood. With this, a bright beam illuminates the tunnel ahead in a kaleidoscope mosaic of shifting shadows.

- Female miner, Len Leatherwood, cautiously walks ahead sweeping a gas meter from floor to ceiling, measuring the toxic gas dangers as the survivors labor to move forward.
- Curious at the sound of trickling water, Kat drifts over to the tunnel wall and puts a hand up to it. Moist! She moves to Carl, to ask what it means.
- An eerie sound of running water grows louder as the survivors advance into the darkness.
- As Len takes a step, the ground collapses beneath her and she plunges into a giant sinkhole (#3 death – disappears into a bottomless chasm), The ground continues to collapse toward the remaining survivors and disappear into the chasm. Carl slams the mining cart into reverse, leaps off and races off to intercept Kat.
- Kat seems oblivious to what's occurring. Carl hauls Kat over his shoulder and scrambles away from the collapsing tunnel floor.
- In seconds, a dark steamy abyss swallows up earth between the survivors and a possible path to rescue.
- Exploratory fracking has caused the water table above to leak into the coal veins creating the potential for unstable underground sinkholes.
- At topside, the President visits the site and gives a speech about how America has to transition to safe clean renewable energy to prevent disasters like this from occurring in the future. Ted tries to present him a gift of a vial of coal but the President rejects it.
- Hot moist air rising from the chasm causes the temperature and humidity to spike. Life lies on the other side of the chasm, death patiently waits where they stand.
- In fear and despair, survivors spread out to explore the extent of the chasm. Several flares are tossed in and across this gaping hole that represents certain death. The chasm stretches from wall to wall across the tunnel and extends for thirty feet down the tunnel. No chance of jumping across. The survivors gather back at the edge in despair.
- Carl unpacks ropes, a hammer and a bag of mining spikes. He pounds a spike into the moist wall of the tunnel at the edge of the chasm and secures the rope around his torso and a section of rope to the spike. He dangles his weight from it. It holds. With the bag of spikes around his neck he scrambles out along the tunnel wall attempting to bridge the chasm. As he progresses, the spikes start slipping, each coming out faster than the previous one. Urgently, he pounds a spike and transfers his weight to it before the previous one works loose and falls. Suddenly, the spike he's on breaks free and gashes his leg, Other spikes rapidly fail until the only the original spike remains. Kat sees it is coming free. She grabs the end of the rope and thinking fast ties it to the mining cart. Kat reverses the electric cart and pulls the injured Carl to safety.
- Kat tends to his bleeding leg and asks Carl what's the top speed of the electric cart. 35 miles an hour. Kat tells of her scholarship in college as a long jumper. Tying a rope to her torso she accelerates the cart toward a row of flares at the chasm's edge and like a catapult she hurls herself airborne as the vehicle slams into the cliff wall on the other side. She lands in a heap, safely on the other side.
- Securing the rope ends, the survivors battle against the deadly rising heat, as they are hauled across the abyss.

- A dehydrated and injured Stan hears the enticing sound of running water and with a flare in his hand, he trudges down the tunnel to where it ends. Before him a pool of life giving water sits. In careless excitement, Stan fills his protective GLOVED hands and greedily drinks. Scalding fire burns his lungs and brings forth an agonizing scream before he stumbles with a loud splash into a deadly caldron of scalding water. His injured arm prevents an easy escape. Screams die as his comrades arrive in time to see **Stan's** floating carcass disappear beneath the deadly waters (#4 death – scalded alive).
- Their path to survival, again appears to vanish. Survivors gather silently at the water's edge. The map reveals a clear unobstructed path where the reality now shows a deadly obstacle confronting them. As Carl studies the map, the survivors spread out and explore this cavern. Narrow crawl spaces lead off the tunnel.
- Miners **Chris Hartwick** (30's) and **Steve Man** (20's) explore a passageway. A hacking cough consumes them as they gasp to fill their lungs with breathable air in the toxic environment. They crawl deeper into one promising claustrophobic passageway; it narrows to a belly flat coffin size crawl space which suddenly collapses.
- Suffocating, Chris screams as Steve tries to pull him out. He can't free him. As the roof continues to collapse, Steve cuts the rope connecting them and screams to be pulled out. Outside we hear **Chris'** death screams (#5 death – trapped, suffocated and crushed).
- Fear grips everyone, constricting every breath. Afraid to explore, survivors collapse in the intolerable humid heat, waiting for death. Carl examination of the map suggests the water may be only 20 meters across. He puts a gloved hand in the water and counts to twenty. Properly insulated a person might be able to make it to the other side without 3rd degree burns.
- Carl rapidly wades into the scalding water and swims with his head above water. Ten meters out the roof meets the water line and he abandons the swim and scrambles back to land. Kat drags his steaming body out. Survivors blame Carl for leading them into this situation.
- On close examination the map suggests this flooded area is a dip in the tunnel floor and that it rises again just beyond the submerged section.
- Miner, **Sharon Brand** (30's), volunteers to swim to the other side. She swam in college. Perhaps a person could make the other side if they protected their face by wrapping it in rags.
- She submerges where the roof's edge and makes it across with a rope tied to her torso. On the other side, she tosses a flare onto dry land.. She scrambles out, steam pouring off her. She jerks the scalding rags off her face. and yanks the line twice, to signal she's made it.
- Equipment and people are RAPIDLY dragged across by rope. All except Ira who refuses. Ira doesn't swim and if this is the escape they can send back a rescue team.
- On the other side, Big Bill grabs a flare and moves up the tunnel. Ahead, the tunnel ends at a cave-in leading to where the second elevator shaft would be. A shadowy silhouette moves toward him. A garbled noise frightens Big Bill who stumbles backward. He grabs his gun and pumps several bullets into the thing (#6 death – rescue miner – murdered out of fear). Kat runs past Bill's flare and discovers the dead rescue miner, with a bullet right through his breathing mask. She also discover the collapsed second rescue shaft. Kat and Bill argue. He drops the flare in his hand because it starts SPARKING from pockets of methane drifting their direction. Gasping for breath, they stumble back to the pool and collapse.

- Carl grabs a gas level meter from a water-proof storage bag to take a reading. Carbon Monoxide and Methane levels are rising dangerously. The distant abandoned flare starts flares into a fireball. Carl grabs the burning flare at his feet and tosses it in the water. A massive explosion in the distance as a large methane cloud catches fire and starts moving across the ceiling toward the survivors.
- The cave's ceiling is on fire, burning methane taking away the life giving oxygen and rapidly rising the temperature. Everyone scrambles back across the pool to where Ira waits.
- On the other side, exhausted, burned and frightened many collapse into a toxic sleep.
- Kat and Carl link up in a nightmare. They stand before a giant cavern with an odd mineral formation.
- In the grips of his own nightmare, **Wes Alderson** (20's) rises in a trance, grabs a mining pick and steps over to a sleeping Sharon and impales it into the back of her head (#7 death – murdered in her sleep). He turns on Big Bill who unable to sleep draws his gun and pumps two rounds into **Wes** (#8 death – murdered in a helpless trance). Carl wakes and confronts Bill about the killings. Bill levels his gun on Carl and pulls the trigger. CLICK! No bullets. He immediately drops the gun and pulls a razor sharp hunting knife and motions to the dead body of Sharon.
- At that moment, the water in the pool starts to recede. Fingers of fire crackle and sweep across the water's surface. The fire spreads as the water recedes. Soon the cave will catch fire just like the other side and they will all be burned alive.
- Carl and Kat urge everyone to spread out and look for a particular formation of minerals he'd seen in his dreams.
- Kat and Ira spot the odd mineral formation. Ira screams for everyone to follow him. He heads into the tunnel on all fours behind him is Jean. Before she can enter the passageway, Big Bill shoves her aside and rushes into the tunnel. Carl and Kat follow Jean while Steve crawls in last urging everyone forward.
- At the head of the line, Fat Ira is stuck. Wedged tight, he can't get through nor go back. Everyone shoves forward as a firestorm swarms through the cave they just left. A wave of fire moves into the passageway. At the back of the chain of survivors, **Steve** (#9 death – burned alive) ignites. In Steve's unnerving death screams, Big Bill takes out his knife and starts carving away at **Ira** (#10 death – carved up while still alive). Blood splatters everywhere as Big Bill throws body parts behind him to make room to push past Ira.
- Big Bill squeezes past Ira's body and comes to a dead end. Screams from those behind pressure Big Bill to use his knife to claw through the blockage until the tunnel widens. Everyone crawls past IRA's horrified dead face.
- The passage opens into an expansive cavern. Big Bill notices the cooler air and hears sounds moving about. The remaining people scramble into the cavern.
- A cave-in temporarily cuts Jean and Big Bill off from Carl and Kat. Jean and Big Bill explore ahead.
- Emboldened at the idea that they may soon reach the surface. Jean screams accusations of murder at Big Bill for murdering her husband and threatens to sue his company. Jean stumbles forward in the ankle deep water of a shallow stream.
- **Jean** suddenly disappears to her waist into a sinkhole of tar (#11 death – drowning in tar pit). She screams for Big Bill to pull her free. Bill grins and tells her no person no lawsuit.
- Deeper in the cavern bats swarm. Somewhere there's an exit. The look on Big Bill's face shows a man who has crossed over the edge into insanity.

- Big Bill backtracks along the stream and hears footsteps approaching fast. He hides behind an outcropping of rocks as Carl and Kat run by being attracted by the dying screams of Jean.
- Carl and Kat sees an APPARITION ahead and stops. They come to an abrupt halt, just before the tar pit. Big Bill comes up from behind and with a rock bashes Carl's head. Carl drops unconscious. The look of the insane shines in Big Bill's eyes as he pulls out his knife to finish off Carl.
- Kat jumps on Bill's back, fingernails digging into his face.
- Bill reaches around and drags Kat off and grips his knife to her throat.
- A GHOSTLY PRESENCE moves over the collapsed body of Carl. Carl rises in a trance staggers toward Kat's screams. Carl takes a step forward. Bill draws blood from Kat's neck.
- Carl collapses like a rag doll. Not sure what has happened, Bill knocks Kat out with the butt of his knife and stalks toward the unconscious Carl, knife ready.
- A glow from Carl rises and swarms over Bill who takes a swipe with his knife. The swirling glow coalesces around Bill, holding him fast. Bill's eyes go wide as he uses his own knife to slit his own throat. **Bill** explodes into a fire ball (#12 death – held fast, murdered by his own hands and vaporized).
- Carl and Kat awake outside in the cool forest. Unsure. In the distance, noises of civilization. They stagger down to the highway.
- Carl and Kat enter the mining camp and are interviewed.
- Over dinner Carl gives Kat a small vial of coal as a remembrance and asks her out on a REAL date.
- President sees the headlines about what happened with his EPA team. The President invites Kat and Carl to the white house after a report by Kat recommends the closer of the coal mine.
- Kat gives a vial of coal to the President as a memento.
- Everyone enjoys a Presidential meal before Kat and Carl leave.
- That night the President takes this into his bedroom and places on the bed stand.
- President sweats and tosses wildly as dreams convince him of the benefits of coal. In the morning, under duress the President grabs the vial of coal and puts it in his pocket.
- A speech to the nation reverses course and talks about a new direction in America's energy independence with coal as the pillar of the administration's new energy policy.
- Hundreds of Coal Boxcar containers being filled with coal moves out from the mine down train tracks.

Characters

- Kat Johnson - female, 28, protagonist, EPA Inspector (**lives**)
- Carl Taylor - male, 32, love interest, Lead Mine Foreman (**lives**)
- Ted Bailey - male, 40's, Coal Mine Coordinator (**lives**)
- Jim Tannenbaum - male, 50's, EPA Inspector –

- Trig Masters (1st to die - claustrophobic fear keeps him in elevator that plunges 5100 ft.)
- male, 30's, Coal Miner – (2nd to die – crushed to death in elevator/shaft cave-in.)
- Len Leatherwood - female, 20's, Coal Miner – (3rd to die – disappear through a sink hole)
- Stan Bemis - male, 30's, EPA Inspector – (4th to die - burnt lungs by drinking from scalding pool of water)
- Chris Hartwick - male, 20's, Coal Miner – (5th to die – cave in crawl space)
- Unknown Rescue - male, ??, 2nd rescue team member (6th to die – shot by Bill because he thought he was a monster)
- Steve Man - male, 30's, Coal Miner – (7th to die – burned alive methane cloud)
- Ira Wycot - male, 50, Head of EPA – (8th to die – too fat to fit in narrow tunnel, hacked apart by “Big Bill” Carter)
- Sharon Brand - female, 20's, EPA Inspector – (9th to die – she is killed by Wes while she sleeps)
- Wes Alderson - male, 20's, EPA Inspector – (10th to die – falls asleep and with a digging pick and kills Sharon then is shot by Big Bill)
- Jean Wycot - female, late 20's, wife of Ira (11th to die – killed by drowning in tar)
- “Big Bill” Carter - male, 50, CEO of CONSOL Energy, Owner of Pennsylvania coal mine (12th to die – killed by Tar Spirit Entity)
- President - male, 40's, President of the United States (lives)
- Rescue Team #1 - 10 coal miners (all die)

Background Information

- Dry heat is a lot less destructive on the body than wet heat. 120 feels like 150 (lethal)
- Swim 50 feet in scalding hot water An approximate one-second exposure to 160° F water will result in third degree burns. (1) Where the water is 130° F, an approximate half-minute exposure will result in third degree burns. (2) This is the reason that the Consumer Product Safety Commission suggests that water heaters be set to a maximum temperature of 120° F, even though an approximate ten minute exposure to water heated to this temperature can result in third degree burns. A safe temperature for hot water is 110° F, which exposure to results in third degree burns in approximately ten hours. (3) Even though this is a 'relatively-safe' temperature, exposure to water set at 110° F is painful; the human pain threshold is around 106-108° F. It is important to remember that 212° F is the boiling point of water, meaning that the temperatures at which exposure to water will result in burns is much less than the boiling point of water.

Table of Hot Water Scalding Temperatures and Times:

Water Temperature Setting	Exposure Time	Effects of Exposure to Hot Water at High Temperatures
Water at 100 degs F or below	See Safety Note	Most water heaters are unlikely to scald an adult occupant
Water at 120 degs F	5 minutes	2nd & 3rd degree burns on adult skin

Water at 130 degs F	30 seconds	2nd & 3rd degree burns on adult skin
Water at 140 degs F	5 seconds	2nd & 3rd degree burns on adult skin
Water at 150 degs F	1.5 seconds	2nd & 3rd degree burns on adult skin

First-Degree Burn — First-degree burns are red and very sensitive to touch, and the skin will appear bleached when light pressure is applied. First-degree burns involve minimal tissue damage which involves the epidermis (skin surface). These burns affect the outer-layer of skin, causing pain, redness and swelling. Sunburn is a good example of a first-degree burn.

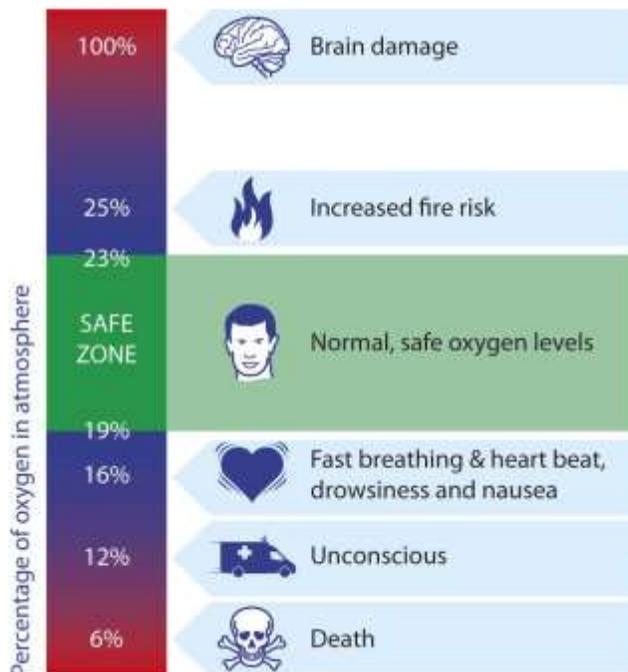
Second-Degree Burn — Second-degree burns affect both the outer-layer (epidermis) and the underlying layer of skin (dermis), causing redness, pain, swelling and blisters. These burns often affect sweat glands and hair follicles. If a deep second-degree burn is not properly treated, swelling and decreased blood flow in the tissue can result in the burn becoming a third-degree burn and possible infections.

Third-Degree Burn — Third-degree burns affect the epidermis, dermis and hypodermis, which generally cause charring of skin or a translucent white color, with coagulated vessels visible just below the skin surface. These burn areas may be numb, however, the person may complain of pain. This pain is usually caused by second-degree burns. Healing from third-degree burns is very slow due the skin tissue and structures being destroyed. Third-degree burns usually result in extensive scarring.

- Clouds of burning methane drifts through the tunnels
- The ceiling in 4 -10 feet high.
- Ears are pressurized as we descend.

Oxygen Depletion:

- The normal concentration of oxygen in the atmosphere is approximately 20.9% volume. In the absence of adequate ventilation the level of oxygen can be reduced surprisingly quickly by breathing and combustion processes.



- Oxygen levels may also be depleted due to dilution by other gases such as carbon dioxide (also a toxic gas), nitrogen or helium, and chemical absorption by corrosion processes and similar reactions. Oxygen sensors should be used in environments where any of these potential risks exist.
- When locating oxygen sensors, consideration needs to be given to the density of the diluting gas and the “breathing” zone (nose level). For example helium is lighter than air and will displace the oxygen from the ceiling downwards whereas carbon dioxide, being heavier than air, will predominately displace the oxygen below the breathing zone. Ventilation patterns must also be considered when locating sensors.
- The table below shows the effect of a diluting gas on the level of oxygen.

CONCENTRATION OF DILUTING GAS	RESULTING OXYGEN CONCENTRATION
0.5%	20.8%
1%	20.7%
5%	19.9%
10%	19.0%
15%	18.2%
20%	17.4%
25%	16.7%

- Oxygen monitors usually provide a first-level alarm when the oxygen concentration has dropped to 19% volume. Most people will begin to behave abnormally when the level reaches 17%, and hence a second alarm is usually set at this threshold. Exposure to atmospheres containing between 10% and 13% oxygen can bring about unconsciousness very rapidly; death comes very quickly if the oxygen level drops below 6% volume.
- The hazard presented by oxygen deficiency is easily under-estimated; especially as risks can exist in non-industrial environments such as cellars or bars where CO₂ and nitrogen are used. Oxygen depletion due to corrosion or bacterial activities presents a significant risk in confined spaces such as pipes, vessels, sewers and tunnels. Oxygen sensors are often installed in laboratories where inert gases (e.g. nitrogen) are stored in enclosed areas.

Images That Shows How Scary Being Trapped Underground Might Be











